



## **Danish elite athletes' perceptions of anti--doping deterrents**

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# The SFPS' 5<sup>th</sup> International Congress of Sport Psychology

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**Actes du 5<sup>ème</sup> Congrès International de Psychologie du Sport de la SFPS**



# Welcome Message from the SFPS President

We've been waiting for a long time. And now it begins!

The day has dawned for the beginning of the SFPS's V International Congress of Sport Psychology. This congress has benefited from the involvement of a large number of our members and all the national and international colleagues specializing in sport psychology. They have made a great effort in contributing and reviewing the submissions to our scientific program. The SFPS Managing Council and the Congress Organization and Scientific Committees, under the able leadership of Fabienne d'Arripe-Longueville, have done an outstanding job in convening what promises to be one of the best Congresses in our history.

The Congress program will include keynotes addresses by distinguished colleagues specializing in sport psychology, as well as other related disciplines, and a large number of presentations by participants coming from countries located all over the world and symposia that bring together colleagues with diverse perspectives on a variety of interesting topics. Holding our Congress in Nice, a thriving centre for scientific and technological advances, when considering the support of the Health and Sport Diagana Society (*Société Diagana Sport Santé D2S*), seems especially appropriate for contributing to the advancement of applied sport psychology.

On behalf of the SFPS and the Congress participants, I would like to thank our colleagues in the University of Nice for their dedicated efforts in hosting an outstanding Congress, and express our appreciation for your scientific and professional commitment in joining us in Nice. We hope you will be stimulated by, and greatly enjoy, the excellent program that highlights scientific sport psychology and its applications in multiple areas, especially for "performance and health across the lifespan", the theme of our Congress.

I wish to extend to all participants a warm welcome to Nice and best wishes for a stimulating and productive experience in attending SFPS's V International Congress.

**Greg Décamps, Ph.D.**

**SFPS President**

Nous l'attendions avec impatience depuis un certain temps. Et le voici !

Le moment est enfin venu pour l'ouverture du 5<sup>ème</sup> Congrès International de la *Société Française de Psychologie du Sport*. Ce congrès bénéficie non seulement de l'implication et de la participation de nos membres, mais également de l'ensemble des collègues nationaux et internationaux œuvrant dans le domaine de la psychologie du sport, participation à l'origine du grand nombre de contributions figurant dans notre programme, sans oublier leur expertise. Avec l'aide du comité directeur de la SFPS, le comité d'organisation ainsi que le comité scientifique du congrès ont réalisé, sous la responsabilité de Fabienne d'Arripe-Longueville, un travail exceptionnel en organisant ce qui s'annonce d'ores et déjà comme l'un des meilleurs Congrès de notre histoire.

Le programme de notre congrès comportera, comme attendu, des conférences plénières réalisées par des collègues renommés en psychologie du sport mais également dans d'autres disciplines qui y sont liées. Egalement, un grand nombre de communications réalisées par des congressistes venant de pays du monde entier et des symposia qui réuniront des chercheurs d'orientations variées autour de thématiques plus intéressantes les unes que les autres. La tenue de ce congrès à Nice, connue pour ses avancées scientifiques et technologiques, et le soutien accordé à notre congrès par la *Société Diagana Sport Santé (D2S)*, constitue un contexte des plus prometteurs en vue d'une meilleure reconnaissance des retombées de la psychologie appliquée au sport.

Au nom de la SFPS et de l'ensemble des participants, je tiens à remercier nos collègues de l'Université de Nice pour l'ensemble de leurs efforts ayant permis à cette grande manifestation internationale de voir le jour, et exprimer à chacun à quel point votre présence à Nice, signe de votre implication scientifique et professionnelle, est pour nous une satisfaction des plus grandes. Nous espérons que vous profiterez pleinement de ce programme qui renforce l'importance et le rôle de la psychologie du sport dans de nombreux domaines, notamment ceux de la performance et de la santé tout au long de la vie, ce qui constitue le thème de notre congrès.

Je souhaite donc la bienvenue à Nice à chacun d'entre vous et vous adresse tous mes vœux afin que ce 5<sup>ème</sup> Congrès International de la SFPS reste une expérience des plus productives et des plus stimulantes.

**Dr Greg Décamps,**

**Président de la SFPS**

# Welcome message from the organization committee

**Dear colleagues, dear friends,**

The organizing committee of the 5<sup>th</sup> International Congress of the French Society of Sport Psychology is delighted to welcome you on the shores of the Mediterranean, at the Faculty of Sport Sciences of Nice Sophia Antipolis University.

This international congress, entitled "*Sport Psychology for Performance and Health across the lifespan*" is sponsored by Stéphane Diagana, exceptional athlete and partner of the Laboratory of Human Motricity, Education, Sport and Health (EA 6309) at the University of Nice Sophia-Antipolis, through research and development projects of the *Diagana Sport Santé* Company (D2S).

The main objective of this conference is to review the scientific advances in the field of sport and exercise psychology for the purpose of performance or health from various theoretical and methodological approaches. A second objective is to promote the sharing of knowledge and experiences between researchers, sports and health professionals, coaches and athletes.

We are pleased to welcome internationally recognized speakers, representing different scientific fields (sport psychology, social psychology, health psychology, cognitive neurosciences) which may contribute to a better understanding of the psychological mechanisms involved in physical activity and sports. Following the international call for papers, we received over a hundred proposals for papers, mostly structured around thematic symposia related to sport performance or exercise and health. Oral communications and posters were also organized around these themes. Finally, we propose several methodological and thematic workshops to discover measurement tools or to interact with professionals from elite sport or exercise for health.

We are delighted that this event is an opportunity to gather the vast majority of the French community of psychology of sport and exercise, and that the event has also attracted foreign colleagues from many countries. We are also pleased to welcome young researchers, whose presentations will be evaluated and rewarded by the traditional "young researchers SFPS awards."

We hope that, beyond the scientific richness of this conference, you will appreciate the exceptional moment of conviviality at the evening banquet which will be held at the *Palais de la Méditerranée* in Nice. We also hope that most of you can extend your stay by visiting the many touristic attractions of the area.

We wish you a great scientific congress, rich knowledge and exchanges, and an excellent stay on the French Riviera.

**For the organizing committee, F. d'Arripe-Longueville & K. Corrion**  
**For the scientific committee, R. Radel & C. Clément-Guillotin**

**Cher(e)s collègues, cher(e)s ami(e)s,**

Le comité d'organisation du 5<sup>e</sup> Congrès International de la Société Française de Psychologie du Sport (SFPS) a le grand plaisir de vous accueillir au bord de la Méditerranée, sur le site de l'UFR STAPS de l'Université Nice Sophia Antipolis.

Ce congrès international, intitulé « *Sport Psychology for Performance and Health across the lifespan* » est parrainé par Stéphane Diagana, athlète d'exception et partenaire privilégié du *Laboratoire Motricité Humaine, Education, Sport, Santé* (EA 6309) de l'Université de Nice, dans le cadre de projets de recherche-développement de la *Société Diagana Sport Santé (D2S)*.

L'objectif principal de ce congrès est de faire le point sur les avancées scientifiques dans le domaine de la psychologie du sport et de l'exercice à des fins de performance ou de santé, à partir d'approches théoriques et méthodologiques diverses. Un second objectif est de favoriser le partage de connaissances et d'expériences entre différents types d'acteurs (chercheurs, professionnels du sport et de la santé, entraîneurs, athlètes).

Nous avons l'honneur d'accueillir des conférenciers de renommée internationale, représentatifs de différents champs scientifiques (psychologie du sport, psychologie sociale, psychologie de la santé, neurosciences cognitives) susceptibles de contribuer à une meilleure compréhension des mécanismes psychologiques liés aux activités physiques et/ou sportives. Après un appel à communications international, nous avons reçu plus d'une centaine de propositions de communications, majoritairement structurées autour de *symposia* thématiques liés au sport de performance ou au sport-santé. Les communications orales et affichées ont également été organisées autour de ces thèmes. Enfin, nous vous proposons plusieurs ateliers méthodologiques ou thématiques qui permettront de découvrir des outils de mesure ou d'échanger avec des professionnels du sport de haut niveau ou du sport-santé.

Nous sommes ravis que cet événement soit l'occasion de réunir la grande majorité de la communauté française de psychologie du sport et de l'exercice, et qu'il ait également attiré des collègues étrangers de différents pays. Nous sommes également heureux d'accueillir de jeunes chercheurs, dont la qualité des présentations sera évaluée et récompensée par les traditionnels « prix jeunes chercheurs de la SFPS ».

Nous espérons qu'au-delà de la richesse scientifique de ce congrès, vous saurez apprécier le moment privilégié de convivialité que nous vous avons réservé dans le cadre du banquet qui se tiendra au Palais de la Méditerranée de Nice. Nous espérons aussi que les plus chanceux pourront prolonger leur séjour par la visite des nombreux sites touristiques dont la région est caractéristique.

Nous vous souhaitons un excellent congrès scientifique, riche de connaissances et d'échanges, ainsi qu'un excellent séjour sur la Côte d'Azur.

**Pour le comité d'organisation, F. d'Arripe-Longueville et K. Corrion**  
**Pour le comité scientifique, R. Radel et C. Clément-Guillot**

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<sup>1</sup> Le comité scientifique remercie chaleureusement Olympe Neveu pour sa contribution dans la mise en forme de ce document.

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# The “why” of goal striving matters

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**Keywords**: goal regulation, disengagement, persistence, goal motivation, goal striving

## Introduction

Whether it is to perform well in an exam, to maintain physical health, or to stay ahead of the competition, goals form an integral part of daily life. A large literature has examined factors related to goal striving such as how goals are activated, operate, monitored, and guided by motives. The Self-Concordance (SC) model (Sheldon & Elliot, 1999) suggests that goal motives can be categorized as autonomous (based on personal interest, enjoyment, or perceived importance) or controlled (driven by internal or external pressures and contingencies related to social approval). Grounded in Self-Determination Theory (SDT; Deci & Ryan, 1985), the SC model predicts that the more autonomous their motives are, the more individuals will sustain effort toward goal pursuit and eventually goal attainment. However, goal pursuit is rarely without its challenges. How individuals appraise and cope with increased goal difficulty, the implications for goal persistence and attainment, and the role of motivation for goal striving in this process have thus far escaped empirical attention in the SDT/SC literatures. Further, comparatively less is known about strategic goal disengagement from goal pursuit. Reactions to goal-related challenges have implications, not only for future goal striving and performance, but also for psychological well-being (Smith, Ntoumanis, Duda & Vansteenkiste, 2011).

## Objectives

In my talk I will present a series of field and laboratory studies which examined the role of autonomous and controlled motives for goal pursuit in predicting adaptive and maladaptive self-regulation responses when striving for an increasingly difficult but attainable goal, and when faced with an unattainable goal. Antecedents, mediators, and outcomes of the relations between goal motives and goal regulation were also tested.

## Conclusion

Autonomous goal motives positively predicted objectively assessed- persistence with increasingly difficult goals, and the cognitive ease of reengagement with an alternative goal in the face of an unattainable goal, especially when participants realized goal unattainability relatively early during goal striving. Autonomous motives, however, were negative predictors of the cognitive ease of disengagement from an unattainable goal. Controlled goal motives were not related to effective regulation of difficult or unattainable goals. Carver and Scheier (2005) remarked that “for successful negotiation of the challenges life provides, we believe yet another kind of competence is also important: the ability to know when to continue the effort to reach a goal, and when to disengage and let it go” (p. 543). Our findings provide an endorsement for these remarks. The findings, in addition, highlight the relevance of the motivation underlying goal striving in painting a broader picture of this competence.

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## Emotion, stress and coping in sport or extreme situations

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### ***Overview***

Emotion and stress are involved in constraining or extreme situations such as sport competition, military training or conflicts or space simulation. These situations are particularly interesting because they could generate stress factors which could overwhelm adaptation process. This symposium proposes the examination of emotion and stress, and their effects on performance, and well-being in participants subjected to these situations. A better understanding of the mechanisms related to emotion and stress could allow more appropriate interventions to regulate these mechanisms.

**Keywords:** Emotion, Stress, Coping, Sport, Extreme situation

# Time-courses and relationships between coping, defense mechanisms, emotions and depression during a space analogue

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**Keywords:** Coping, Defense, Emotions, ICE environments, Adaptation

## Introduction

It has been clearly recognized that psychological and psychosocial factors significantly modify human behaviors and performance during real space flights. Adaptation mechanisms to such an isolated and confined extreme (ICE) environment have become an issue of major importance. Behavioral and affective reactions to these stressors can include a variety of symptoms including an increase in stress level, emotional instability, hypersensitivity or depressive reactions.

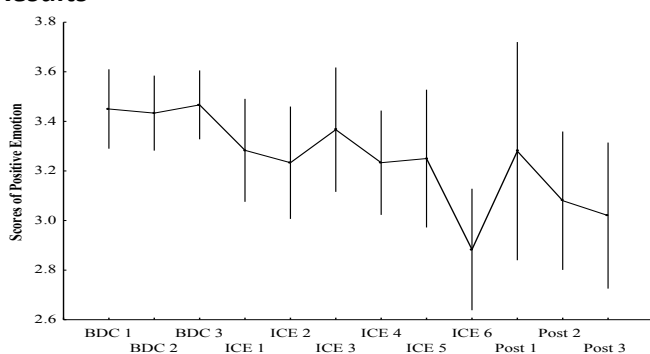
## Objectives

This study investigated the time-courses and the relationships between emotions, coping, and defense mechanisms considered as key factors in adaptation to ICE environments.

## Method

Six men (Russians, German and French,  $32.7 \pm 5.9$  years, mean  $\pm$  SD) participated to the Mars-105 study, a 105-day space Simulation at the Institute for Bio-Medical Problems (IBMP) in Moscow with the participation of the European Space Agency (ESA) and the Russian Space Agency (Roscosmos). This study was a longitudinal single-group design with repeated measures across 12 assessments during 3 periods (baseline, ICE period, and post-isolation) over a 4-month period.

## Results



During the space simulation, the Mars-105 experiment, positive emotion decreased significantly (F-test,  $\chi^2 = 22.81$ ,  $p < 0.02$ ) and significant positive correlations were found between mature defenses and both positive emotions ( $r_s = 0.89$ ) and Task-Oriented Coping (TOC) ( $r_s = 0.89$ ).

## Conclusion

These findings show the impact of space simulation on affective states and the relations of defense to both coping and emotion, which underline the role of these psychological constructs involved in psychological adaptation processes. The results of the present study add insights into the effects of space simulation in order to offer the participants a better selection, preparation and follow-up of these psychological components recognized as essential for adaptation to extreme environments.



# Cluster analysis of affective states before and during competition

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**Keywords**: cluster analysis, coping, directionality, affective profiles.

## **Introduction**

Positive and negative affective states can be seen as a multifaceted phenomenological experience that can be characterized by the level of their intensity and the extent to which they are perceived as beneficial (facilitating) or harmful (debilitating) for performance (directionality). These two core facets of affects can coexist within each athlete in a given situation but to a varying degree. Identification of prototypical subgroups of athletes with recurring configurations of intensity and directionality of affective states should offer a robust heuristic to examine affective states within a more holistic approach to unpack their complex associations with key athletic outcomes.

## **Objectives**

The purposes of the current study were to identify affective profiles of athletes both before and during the competition, and examine differences between these profiles on coping and attainment of sport achievement goal.

## **Method**

Three hundred and six athletes (36.6% female) ranging in age from 15 to 39 years ( $M = 22.23$ ,  $SD = 4.90$ ) from a variety of sports (e.g., badminton, cycling, gymnastics, tennis, wrestling, basketball, handball, rugby) and skill levels (51% regional, 41% national, 8% international) voluntarily completed a series of self-report questionnaires at two measurement occasions: (a) within two hours before the competition, and (b) within two hours after the competition (i.e., they were instructed to indicate the extent to which each item represented the things or affective states that they had felt, thought or done during the competition).

## **Results**

The results of hierarchical and nonhierarchical cluster analyses conducted on the standardized scores of intensity and direction of affective states revealed four different clusters both before and during the competition. The four clusters were very similar at the two measurement occasions: high positive affect facilitators in which positive affects are high and facilitative whereas negative affects are low and debilitating ( $N = 88$  and  $81$ ), facilitators in which all affects (irrespective of their valence) are perceived as highly facilitative ( $N = 75$  and  $25$ ), low affect debilitators in which positive and negative affects are low and debilitating ( $N = 83$  and  $127$ ), and high negative affect debilitators in which negative affects are markedly high and debilitating ( $N = 60$  and  $73$ ). Results of MANOVAs revealed that coping and attainment of sport achievement goal significantly differed across the pre-competitive affective profiles (Wilk's Lambda = 0.58,  $F(21, 850) = 8.59$ ,  $p < .001$ ,  $\eta^2 = .17$ ) and the intra-competitive affective profiles (Wilk's Lambda = 0.70,  $F(12, 791) = 9.58$ ,  $p < .001$ ,  $\eta^2 = .13$ ).

## **Conclusion**

This study proposed an alternative methodology that may provide researchers and practitioners with a useful way to examine complex naturally-occurring combinations of affective intensity and directionality. Our results indicate that multivariate profiles of affect should be seen as useful heuristics to explicate consequential self-regulatory and achievement correlates of affective states both before and during competitions.

# Interpersonal orientation of motivation and emotional experience during competition

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**Keywords:** Motivation, Emotions, Identification, Social cognitions, Rugby

## ***Introduction***

Some authors put forward the need to consider the type of sport as a moderator of emotional experience. In this sense, intergroup emotion theory (IET; Mackie & Smith, 2000) indicates that a person identified in a group react emotionally to the interests of his group. Cognitive theories of emotions support the IET by highlighting the importance of the goals of the individual in the emergence of emotions, such goals being either self-oriented, or group-oriented. Nonetheless, at the best of our knowledge, no study has investigated the influence of the goal social orientation on emotions in sport.

## ***Objectives***

The purpose of this study was to identify the effects of self- and team-oriented goals on performance and emotions experienced by rugby players during competition.

## ***Method***

Thirty rugby players ( $M = 19.06$ ,  $SD = 0.78$ ) participated in a quasi-experimental design. Two experimental conditions were considered: (G1) self-oriented goals (G2) team-oriented goals. Participants played a 30 min-game with all environmental characteristics they encounter during official championship games. Following the game, a video self-confrontation meeting was conducted. Using visual analogue scales, participants were asked, every 2 minutes (16 measure-times), to identify the emotions they have experienced and perceived for their team as a whole. Players and teams performances were then evaluated by four experts for the needs of the study.

## ***Results***

First, the results show a significant effect of the condition on the emotions felt by the players. The players who adopted team-oriented goals have experienced more positive emotional experiences and assessed their team's affectivity as more positive ( $p < .001$ ). Participants in the group G1 felt significantly more unpleasant emotions while those in the group G2 felt significantly more pleasant ones.

Secondly, the use of a Linear Mixed Effects (LME) model shows a significant effect of the experimental condition showing better individual performance ( $+1.8$ ,  $p < .001$ ) and team performance ( $+2.53$ ,  $p = .003$ ) in the group G2. The results also show that the performance of the G1 team as a whole, was significantly lower than the sum of the performance of the players of this team ( $t(15) = -3.04$ ,  $p = .008$ ) whereas no significant difference was observed for the G2 group ( $t(15) = 0.43$ ,  $p = .666$ ).

Finally, the data analysis shows ripple effects of emotions. Especially, anxiety was reported as contagious, but with no effect of the experimental condition ( $.03 > p > .0001$ ).

## ***Conclusion***

The orientation of the individuals' goals seems to influence the emotional experiences of rugby players during competition, but also their performance. Further research is now needed to investigate the direction of the goal orientation-emotion-performance relationship.

# Effects of mental preparation (TOP) during an intense military training week

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**Keywords** : Mental preparation, “Techniques d’Optimisation du Potentiel”, performance.

## Introduction

Military’s job is particularly dealing with difficult and stressful missions. “Techniques d’Optimisation du Potentiel”(TOP) are processes that could make the soldiers’s adaptations to their binding environment (like extreme situations of armed conflict) easier, and contains various methods of mental preparation. However, no study has attempted to measure the impact of these “TOP” on performances during intense military training.

## Objectives

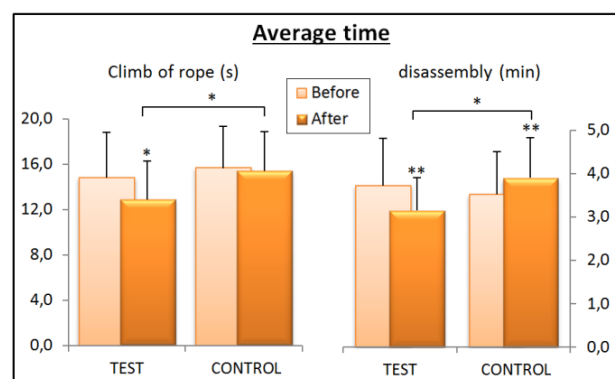
The purpose of this study was to measure the effect of TOP on physical performances in a soldier population of ground forces, during a week of sustained physical practice (> 4 hours per day).

## Method

16 male soldiers in their twenties from the same section of the 54th Artillery Regiment with no experience in mental preparation took part in a 5 consecutive days period of intense training, based on physical and mental exercises with a TOP monitor. Two timed tests are performed before and after the week of formation : one which consists in climbing a 10m rope and one which consists in disassembled and reassembled a weapon (FA-MAS). A control group, of 16 soldiers from another section with the same characteristics as the test group, performed the same training without TOP.

## Results

The performances of the two groups were similar the start of the training. But the test group became significantly faster than the control group climbing a rope ( $t(30) = 2.26, p = .03$ ) and the disassembly weapon test ( $t(30) = 2.52, p = .02$ ). the traineeship, the control group performed the same performance while climbing a rope, but became slower while performing the disassembly weapon test ( $t(30) = 3.08, p = .008$ ).



**Performance comparison intra and inter-group**  
(\* =  $p < 0,05$ ) / (\*\* =  $p < 0,01$ )

## Conclusion

When comparing with the control group, the test group was significantly better to climb the rope (13%), and to disassembly weapons (26%). These results validate our hypotheses: TOP applied during a period of intense military training, helps improving physical performance (here, specific to the military profession) which implies a better stress management. Thus, a daily practice of TOP is strongly recommended during intense military training because it helps maintaining and increasing performance. Now, it would be interesting to find out how many time this improvement will persist and if TOP are as efficient when practiced without monitor.

# Effect of sport dependence on stress management in French soldiers deployed six months in Afghanistan

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## Introduction

Sport activities can be considered either in terms of sport consumption or sport dependence which could characterize a behavioural addiction (BA). During military operations soldiers are used to deal with different stress levels. Whereas sport consumption is considered as an interesting way to handle stress during military deployment, we hypothesised that exercise dependence could be deleterious for stress management.

## Objectives

The main objective of this study concerned the effects of exercise-induced sport dependence on soldiers stress resistance in the context of a six months deployment in Afghanistan.

## Method

In an anonymous prospective cohort study, we evaluated Extra Regimental Sport consumption (ERS) and sport dependence (Exercise Dependence Scale Revised, EDSR) before, during the deployment, and after. The EDSR dispatchs subjects into 3 groups of sport dependence: Non Dependent Asymptomatic (NDA), Non Dependent Symptomatic (NDS), and Sport Dependent (SD). Dependant variables were evaluated before, during and after for anxiety and depression diseases (Hamilton scales) as well as psychological state (Cohen's perceived stress and Profil of Mood Scale (POMS)), and before and after for. Plasmatic Brain Derived Neurotrophic Factor (BDNF), a good marker of central nervous system plasticity.

## Results

Among the 397 young soldiers (mainly non-commissioned officers from infantry units) evaluated before and during the deployment, 131 had been assessed six months after. **Before deployment:** ERS consumption concerned 65% of soldiers. 42% of soldiers have a BA with SD (4%) and NDS (38%). Interestingly, BA was not statistically related to higher ERS consumption. Levels of perceived stress, anxiety and depression diseases were higher when a BA is detected (ANOVA,  $p < .05$ ), and were not influenced by ERS consumption. In soldiers without a BA, results showed that perceived stress and state of "mood of tension/anxiety" were higher in subjects without ERS (ANOVA,  $p < .05$ ). Neither ERS consumption, nor BA altered BDNF concentration. **During deployment:** the percentage of BA observed was not different from before, but the distribution in sport dependence group was modified (McNemar test,  $p < .05$ ). Thus, 64% of soldiers with a BA were not identified as addicted before the deployment. After 3 months, soldiers presenting a BA had a higher state of "Mood of tension/anxiety" (ANOVA,  $p < .05$ ). **After deployment,** both a higher BDNF concentration and anxiety disease score were observed in soldiers developing a BA in comparison of those who did not develop an addiction (ANOVA,  $p < .05$ ).

## Conclusion

BA seems to present: (1) a relation with a high "anxiety" (perceived stress, state of tension, or even anxiety disease), (2) a lability in chronic stress environment. However, BA could be considered as an efficient strategy referred to the high level of BDNF after the mission. A follow-up is ongoing 18 months after the deployment to confirm this assumption.

# Warmth and competence, two big dimensions for judging others in the sport field: mechanisms and applications

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**Keywords:** Warmth, competence, stereotype, physical activity, embodiment

## Overview

Prior research and theories related to social judgment have usually considered stereotype, prejudice, and discrimination, as a univalent antipathy toward outgroups. In contrast to this mainly negative view, recent research based on the Stereotype Content Model (SCM; Fiske, Cuddy, Glick, & Xu, 2002) have portrayed more ambivalent perceptions and reactions.

According to the SCM, stereotypes are captured by two universal dimensions: warmth and competence. These dimensions result from the fact that when people meet others, they want to know their intent (i.e., warmth), and capability to pursue their intent (i.e., competence). The main hypothesis is that many group stereotypes contain both negative and positive components on these two dimensions. Moreover, Fiske et al. (2002) assume that unique emotional responses result from these stereotypes. Specifically, groups viewed as incompetent and cold (e.g., poor people) elicit contempt, whereas groups viewed as warm and competent (e.g., ingroups) elicit admiration. In contrast, groups stereotyped as competent but not warm (e.g., Asians) elicit envy, and groups stereotyped as warm but not competent (e.g., older people) elicit pity. Cuddy, Fiske, and Glick (2007) recently proposed the Behaviors from Intergroup Affect and Stereotypes (BIAS) map. This new framework distinguishes behavioral tendencies (i.e., acting for the other, acting against the other, acting with the other or without the other) toward individual group members. The BIAS map posits that such behavioral tendencies result from warmth and competence judgments and emotional responses.

Thus, the aim of this symposium is to present some mechanisms explaining how warmth and competence dimensions work and some illustrations of the interest of this model in the sports field. It could help understand the role of sports in building social integration between groups and the influences of individuals' movements on social judgments. It could also help disentangle some paradoxical results shown in the literature and sensitize individuals to the ambivalent patterns in order to increase their awareness of the influence of stereotypes.

First, Corentin Clément-Guillotin will present a study examining whether being physically active may challenge the traditional stereotypic chain related to older adults. Then, a second communication by Cyril Forestier will investigate the links between the physical activity information and older adults stereotyping of employees in the workplace. Then, a third communication by Nicolas Margas will focus on intergroup contact and the links between the warmth dimension and behavioral intents in a physically threatening context. Finally, a fourth communication by Sébastien Freddi will investigate whether the traditional stereotypic chain (from the judgments to behavioral cues) of the SCM could be reversed and whether the two basic dimensions of warmth and competence are differentially related to approach-avoidance and vertical motions in particular.

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# **You are old and you do not want to fall into the traditional stereotype? Be physically active!**

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**Keywords:** Older adults, stereotype content, competence, physical activity

## **Introduction**

Older adults are often judged in negative terms (for a review see Kite, Stockdale, Whitley, & Johnson, 2005). In particular, older people, have been consistently stereotyped as warm but not competent across cultures and contexts (Cuddy, Fiske, & Glick, 2008). As a result, discrimination is regularly observed in many social areas such as the medical domain or the workplace where adults advancing in age have difficulties finding an employment (McCann & Giles, 2002). It is therefore crucial to identify strategies that may help older adults cope with these discriminative practices.

## **Objectives**

Based on the SCM and the BIAS Map (Cuddy et al., 2008), we examined whether being physically active may challenge the traditional stereotypes related to older adults.

## **Method**

We compared how 94 participants ( $M_{age} = 24.48$ ,  $SD = 7.15$  years) judged one of three target groups (older adults in general, physically active older adults, and socially active older adults), with regard to status (e.g., “how economically successful have [group] been?”), competition (e.g., “if resources go to [group], to what extent does that take resources away from the rest of the society?”), warmth, competence, elicited emotional reactions (e.g., “To what extent do people in France tend to feel admiration toward [group]?”), and elicited behavioral reactions (e.g., “Do people in France generally tend to fight [group]?”).

## **Results**

Results showed that being physically active was associated with higher status and competence. Physically active older adults were specifically viewed as an admired group eliciting both active (helping) and passive facilitation (associating) tendencies.

## **Conclusion**

Beyond the well-known health perspective related to the regular participation of older adults in physical activity, the present results open a social optimistic perspective, in which being physically active seems to be an excellent way to challenge the widespread and resistant stereotype content of older people commonly perpetuated.

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# Physical activity: a way to modify the elderly stereotypes in the workplace?

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**Keywords**: Stereotypes, behavioral tendencies, elderly people, physical activity, impression formation

## Introduction

Based on previous research on the exercise stereotype phenomenon (e.g., Martin, Sinden, & Fleming, 2000), Greenlees and his colleagues (Greenlees, Hall, Manley, & Thelwell, 2011; Greenlees, Webb, Hall, & Manley, 2007) found that older persons reporting doing exercise are positively perceived on physical appearance dimensions and several personality traits, notably on competence-related traits (e.g., works hard, has self-confidence). Authors concluded that future research should examine behavioral consequences on perceivers of such positive impression formation.

## Objectives

In the present study, we investigated whether older adults doing physical activity would benefit from positive stereotyping as well as positive behavioral responses in the workplace. The influence of the type of physical activity (solitary exerciser *versus* social exerciser *versus* active living) on impression formation was also examined.

## Method

Participants were employees from the University and from different age groups. They read a description of a hypothetical older colleague presented differently, depending on the condition: control, solitary exerciser, social exerciser, active living, and socially active target. Then, they rated how they perceived the target on items relative to competence and warmth traits and behavioral tendencies.

## Results (Hypothetic)

We expected that (1) the exerciser targets would elicit higher competence judgments and more positive behavioral reactions as compared to the other targets, (2) the social exerciser target would be rated as warmer than the other targets.

## Conclusion

Employability of older adults is a major social issue, and age discrimination based on stereotypes related to older people has been highlighted many times in the work setting. Practicing physical activity could be an important avenue for facing the high level of discriminatory treatment that older workers often endure in the workplace.

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# The mediating role of warmth in the prosocial effect of global shared threat on outgroup behavioral tendencies

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**Keywords**: Stereotype content model, competence, intergroup relation, evolution, mediation

## Introduction

According to the common ingroup identity model (Gaertner et al., 1999), we propose that a Global Shared Threat (GST) by ingroup and outgroup members improves behavioral tendencies toward the outgroup. Moreover, as the stereotype content model (Fiske et al., 2002) and the evolutionary perspective propose a link between warmth and survival, we assume that GST influences warmth but not competence. Following the behaviors from intergroup affect and stereotypes map (Cuddy et al., 2007), the enhancement of outgroup warmth by GST should explain the improvement of the behaviors towards outgroup.

## Objectives

We aim to show that (1) GST improves the outgroup's warmth and behavioral intentions, and (2) the outgroup warmth mediates the prosocial effect of GST on behavioral tendencies toward the outgroup.

## Method

In two studies in laboratory and two studies in physical education settings, based on the minimal group paradigm or natural groups, we induced a GST or a control conditions (threat of electric shocks or not, climbing and gymnastic exercises with perceived physical threat or not) during an intergroup contact (blue and green groups, Caucasians and Asians, Caucasians and Africans; ordinary pupils and disabled pupils) ( $n_1 = 62$  ;  $n_2 = 46$  ;  $n_3 = 36$  ;  $n_4 = 42$ ). Then, the participants completed a questionnaire measuring their judgments about warmth and competence of the outgroup and their behavioral tendencies towards the outgroup (Cuddy et al., 2007).

## Results

In the four studies, the ANOVAs confirmed that outgroup warmth and behavioral tendencies towards the outgroup, but not outgroup competence, were more important in the GST condition (vs control). In the four studies, warmth partially mediated the GST effect on behavioral tendencies.

## Conclusion

The four studies unanimously confirmed the prosocial effect of GST on the behavioral tendencies toward the outgroup and its partial and specific mediation by warmth judgments. The stereotype content model appears particularly useful to understand the role of GST in intergroup dynamics. According to our results, risky sports, which induce GST, could be efficient in reducing discrimination and promote social integration.

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# Metaphor, valence and social judgment: the influence of motion direction on affective judgment about information relating to competence and warmth

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**Keywords**: Competence, judgment, motion, valence, warmth

## Introduction

Several studies have shown that social judgment may be defined by two basic dimensions (Fiske et al., 2007). The first one involves the goal of communion which promotes the processing of social information relevant to *Warmth* (e.g., tolerant, sincere). The second one concerns the goal of agency which promotes the processing of information relevant to *Competence* (e.g., ambitious, competitive). From a functional perspective, embodied theories have proposed that warmth and competence may be associated with different physical experiences. Indeed, whereas warmth has been linked to an approach-avoidance dimension (Wentura et al., 2000), competence is related to a vertical one (Giessner & Schubert, 2007; Meier & Dionne, 2009).

## Objectives

The aim of our studies is to examine the role of emotional valence underlying social judgment within an embodied perspective. More specifically, we investigated whether the two basic dimensions of warmth and competence were differentially related to approach-avoidance and vertical motions.

## Method

Participants were invited to rate their affective judgment about warmth and competence traits projected on a computer screen and associated to a perceived approach-avoidance motion or to a downward-upward vertical motion.

## Conclusion

Information on warmth and competence is important for individuals for their social adaptation, when they are connected to emotional valence as well as behavioral cues and motion direction. Whereas warmth traits are usually processed preferentially (Abele & Bruckmüller, 2011), competence is also important to determine affective judgments about social information when verticality is implied.

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## Eating disorders and body image disturbance in vulnerable populations

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**Keywords**: Eating disorders, body image, norms, vulnerability, physical exercise

### ***Overview***

Eating disorders are a significant public health issue, affecting such vulnerable populations as adolescents, athletes, the elderly, and individuals with chronic diseases. Depending on their severity, these disorders may require intensive care and treatment or prevention strategies (e.g., for subclinical disorders). In many cases, eating disorders are related to body image disturbance (Shroff & Thompson, 2006). The purpose of this symposium will be to describe eating disorders or their prevalence and their related factors in various populations: (a) athletes from France and China, (b) fitness class athletes, (c) aesthetic athletes, (d) older people, and (e) adolescents with anorexia nervosa. Topics that will be discussed include but will not be limited to: prevalence of eating disorders, psychosocial factors of eating disorders and specifically body image disturbance, experience of treatment, special nutritional issues and needs, and the role of physical exercise. Time will be allotted for questions and discussion.

# **A cross-culture study on disordered eating behaviors among French and Chinese athletes and their risk factors from psychological perspectives**

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**Keywords**: Disordered eating, Orthorexia, personality, parental attachment, athletes

## ***Introduction***

Several psychological factors, including high neuroticism (MacLaren & Best, 2009), high alexithymia (Karukivi et al., 2010), and insecure parental attachment (Swanson et al., 2010) have been shown to be risk factors for eating disorders in athletes. Although cultural factors are known to impact eating disorders in the general population (Keel & Klump, 2003), rare was known on the pattern of athletes' eating behaviors between Asian and Western countries in the research field.

## ***Objectives***

The purpose of this inter-cultural study was to: (1) Examine and compare the prevalence of disordered eating among French and Chinese athletes in different gender, sport and competing level; (2) Examine the psychological risk factors of disordered eating for athletes in the two countries, e.i., personality traits, Alexithymia and parental attachment.

## ***Method***

Participants were recruited from two countries: France and China. French participants were 150 athletes and 100 students recruited from Paris-Sud university. Chinese participants were 400 athletes and 100 students from Beijing Sport University. Participants in both countries completed the following questionnaires in French or Chinese version: Big Five Inventory, Toronto Alexithymia Scale-20, State Trait Anxiety Inventory (STAI), Inventory of Parent and Peer Attachment (IPPA), Eating Attitudes Test (EAT-26) and Orthorexia test.

## ***Results***

Part of our results indicated that (1) Female athletes in France reported having developed more disordered eating than male French athletes. In Chinese population, athletes in high competing level have developed more disordered eating and Orthorexia than those in low competing level. (2) In both countries, Neuroticism and trait anxiety were linked positively with disordered eating. Moreover, in Chinese population, Alexithymia and insecure parental attachment were both positively linked with disordered eating.

## ***Conclusion***

We hope that this study may contribute to add more evidence on examining risk factors for eating disorders in athletes from inter-cultural perspectives.

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# Eating disorders among women in fitness classes

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**Keywords**: Fitness activities, eating disorders, women, sport motivation

## ***Introduction***

The literature shows that some sports, such as aesthetic sports, weight division sports, endurance sports and sports with vertical moves, are associated with a higher risk of developing eating disorders (EDs). Studies about EDs in fitness activities are rare.

## ***Objectives***

The purpose of this chapter is to improve the understanding of the role of fitness classes in the development of EDs among women.

## ***Method***

Our investigation was based on questionnaires (N = 1270, M = 23.68 years old, SD = 3.04) and semi-structured interviews with women participating in fitness classes (N = 40, 25 with EDs and 15 without). The questionnaire included, among other questions, the Eating Attitude Test (EAT-26), questions about weight loss methods and participating in sports.

## ***Results***

The results showed that fitness classes sometimes play a role in the development of EDs, but they do not seem to trigger EDs. Quantitative data indicated that 10.31% of women participating in fitness classes reached the critical threshold indicating EDs (EAT-26 score  $\geq 20$ ). Some differences emerged relative to the type and location of fitness classes. Quantitative and qualitative data showed the importance of body dissatisfaction and of the “weight loss/appearance” as an exercise motive in the development of EDs among women. Qualitative data showed that many women with EDs choose to practice less structured activities, such as jogging, cycling or swimming.

## ***Conclusion***

Participating in cardio-based fitness classes, may be considered as a risk factor for the development of EDs, especially among “non-athletic” women, but some other non-structured sports seem to be associated with an even higher risk of EDs among women. Moreover, it is important to understand women’s motivations for participating in sports to improve ED prevention strategies.

## ***References***

Lentillon-Kaestner, V., Allain, M. & Ohl, F. (2013). The role of fitness classes in the development of eating disorders among women. In Peter B. Harris (ed.). Health behavior: new research, p. 1-28.

# Internalization of sociocultural and thin-ideal standards in aesthetic sports: development and initial validation of the ISSTIS scale

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**Keywords**: Thinness, internalization, norms, eating disorders, scale

## **Introduction**

Thinness is part of the sociocultural standards of beauty known to be related to body image dissatisfaction (BID) and eating disorders (ED) (Shroff & Thompson, 2006). In aesthetic sports, thinness is a standard for the athletes, from both aesthetic and performance points of view (Sherman & Thompson, 2009). Measuring the internalization of thin-ideal standards in aesthetic sports athletes should thus provide greater understanding of their BID and ED.

## **Objectives**

The purpose of this study was to develop and validate a scale of internalization of sociocultural and sports-related thin-ideal standards in aesthetic sports: the ISSTIS scale.

## **Method**

The six-step validation procedure followed Vallerand's recommendations (1989). A total of 577 aesthetic sports athletes participated in the various steps.

## **Results**

The preliminary step consisted of translating and adapting the sociocultural internalization of appearance questionnaire (Keery et al., 2004) to the aesthetic sports context and norms. This resulted in a ten-item scale with two subscales: (a) internalization of societal norms and (b) internalization of sports-related thin-ideal standards. The first confirmatory factor analysis showed that these two factors explained respectively 34.77% and 30.11% of the variance. The factorial structure of the questionnaire was confirmed in 200 participants. Results also indicated satisfactory internal consistencies and expected relationships between the ISSTIS subscales and eating behavior variables (DEBQ).

## **Conclusion**

These results provide preliminary evidence for the appropriateness of the ISSTIS scale for French aesthetic sports athletes. Further evaluation of this instrument is warranted to establish the robustness of the present findings. This tool should provide greater insight into ED mechanisms in aesthetic athletes and new directions for prevention strategies.

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# Body image of the elderly in nursing home

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**Keywords**: Body image, elderly, nursing home

## **Introduction**

Few studies have focused on older adults' body image in an advanced age (Roy & Payette, 2012). Hurd Clarke (2002a) showed that the experiences of body image of older adults differed from younger on the tensions between health and physical appearance, inner and exterior view of self, and natural and unnatural body. However, the concern of weight and the emphasis on body dissatisfaction would remain significant with age showing similarities with a younger population (Hurd Clarke, 2002a).

## **Objectives**

Analyze how older adults in advanced age perceive their bodies.

## **Method**

Twenty-five elderly volunteers (Mage = 83.64, range 72-103, 17 women, 8 men) living in nursing homes participated in this study. After obtaining their consent, semi-structured interviews were conducted, were transcribed verbatim and organized into units of meaning.

## **Results**

Twenty participants of 25 emphasize the need for moving. Maintaining physical capacity expressed in terms of capital is a central point allowing a body to be less defective. The physical wear alters body image. So it is important to take care of their body and image. The physical appearance remains a key element in maintaining their identity. For them, the changes in the appearance and vitality can be a threat to their identity. Body weight is another concern of the participants. Dissatisfaction and efforts to change their weight remains predominant. However, female participants indicated that they can simultaneously feel body dissatisfaction and appreciate and respect their bodies. This tension seems specific to female participants. Finally, participants indicate that age is not only a synonym of losses.

## **Conclusion**

The results are discussed in relation to the issues of (re) construction of identity and successful aging. The role of exercise maintenance and feeding behavior would be discussed.

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# Adapted physical activities and anorexia nervosa

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**Keywords**: Anorexia nervosa, adapted physical activities, body image disturbances, psychological troubles

## **Introduction**

Intervention research program investigating the impact of adapted physical activities (APA) among anorexic patients showed a body image acceptance, an identity reconstruction, a better socialization and a better attitude toward themselves (Carraro, et al., 1998; Tolomio, 2007). However, to our knowledge, no study has investigated the role of APA program on body image disturbances and psychological troubles in anorexia nervosa.

## **Objective**

The aim of this study was to evaluate the effect of a three month APA program on body image disturbances and psychological troubles among hospitalized anorexics.

## **Method**

Thirty-one anorexics hospitalized in the same structure took part in this study. Fifteen of them participated to APA program in parallel with their treatment (age =  $22.6 \pm 7$ ; BMI =  $15.84 \pm 1.7$ ). The 16 others (age =  $23.38 \pm 8.9$ ; BMI =  $16.19 \pm 1.6$ ) were included in the control group. No significant difference was found between groups for age and BMI.

## **Results**

Repeated analysis of variance only showed that ABS significantly increased for both groups ( $F(1,29) = 9.69$ ;  $p < .01$ ), with no significant group or interaction (group x test-retest) effects. Results did not reveal significant group, significant test-retest and significant interaction (group x test-retest) effects on ISB and BD. Nevertheless, results revealed a significant increase of global self-esteem ( $F(1,29) = 19.50$ ;  $p < .001$ ), and a significant decrease of social physical anxiety and depression scores between test and retest for both groups (respectively:  $F(1, 29) = 22.97$  and  $F(1,29) = 22.33$ ;  $p < .001$ ). No significant group and interaction (group x test-retest) effects were found on these different measures.

## **Conclusion**

Although APA program did not have a significant effect on body image disturbances and psychological troubles, it did not adversely affect the therapeutic process. It would be interesting to continue research in this way by improving the protocol.

## **References**

Carraro, A., Cognolato, S., & Foirelini Bernardis, A. L. (1998). Evaluation of a program of adapted physical activity for ED patients. *Eating and Weight Disorders*, 3(1), 110-114.

# How do we help athletes and coaches reach their excellence?

## Moving ahead and expanding our interventions

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**Keywords:** Elite performance, intervention, self-efficacy

### ***Introduction***

The pathway to excellence, even when it is individually defined, is often long and vaguely defined. This presentation will address several elements of the process, incorporating more recent literature to help our field move ahead and develop new approaches.

Dr. Graham Jones (2012) research with elite performers, defined as multiple medalists in the top competitions of their sport, or people who have succeeded in more than one field, derives the main elements of what he terms as "Performance Intelligence". The three broad areas that emerged from his research were: Knowing how to maximize your potential, Knowing how to work with your environment and Knowing how to deliver high performance. Traditionally sport psychology interventions have focused on the last area, Knowing how to deliver high performance. The other two areas, particularly Knowing how to maximize your potential, offer great opportunities for our field.

Traditionally sport psychology (and competitive sport in general) focuses on talent detection, with not very good results. Instead one of the main sport psychology goals should be to retain the talent we have, help more athletes reach their top and have longer careers at the top. Achieving this goal would require looking at the growth of the whole person and treating self-awareness as a major skill in sport and performance psychology.

Sport psychology traditionally uses self-control as a framework, but self-control is a limited tool, to be used only in specific circumstances. Developing Self-awareness, helping the performers trust themselves, taking the effort out of self-control will be some of the areas addressed in the presentation.

The underlying mechanisms of Self-efficacy, knowledge of one's skills, and appraisal of the situation will also be discussed, particularly in the context of goal structure. (Cervone, Mor, Orom, Shadel & Scott, 2011).

The last part of the presentation will address developmental modifications to sport psychology interventions. The needs of a young competitor are different from those of a seasoned veteran and we should, as a field, address these changing needs both in coaching and in sport and performance psychology.

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# **Burnout in the sports domain, from the individual to the contextual perspectives: new and innovative conceptualizations**

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**Keywords**: Athlete, burnout, coach, emotion, motivation, reflected appraisals, sense of community

## **Overview**

Athlete burnout is generally defined as a lasting and continuous syndrome, characterized by three dimensions: (a) emotional and physical exhaustion, which is characterized by a sense of emotional and physical fatigue stemming from demands associated with training and competition; (b) reduced sense of accomplishment, which is characterized by a feeling of inefficiency and a tendency to negatively evaluate oneself in terms of sports performance and achievement; and (c) sport devaluation, which is defined as a negative and detached attitude from sport, resulting in a lack of interest about the sport and performance (Raedeke & Smith, 2009). Athlete burnout has been considered to concern 1-9 % of athletes (Gould & Dieffenbach, 2002; Gustafsson, Kenttä, Hassmén, & Lundqvist, 2007).

Even if it has continued to grow in recent years, the literature on burnout in the sports domain, however, rests on a relatively small number of theoretical and methodological approaches (e.g., stress-based approaches, and commitment-based approaches, quantitative – cross-sectional studies).

That is why this symposium intends to open some theoretical and practical paths for the study and prevention of burnout in the sports context. Through this symposium, the authors propose to extend current conceptualizations with innovative theoretical or methodological approaches to study burnout in the sports context. This symposium focuses on burnout among athletes, as well as burnout among coaches.

In a first step, three communications will focus on the individual aspect of burnout in athletes and coaches. Guillaume Martinent will present a study on the reciprocal relationships between motivational regulations and athlete burnout. A second communication, conducted by Nicolas Lemyre, will also focus on the individual aspect of burnout, and deal more specifically with burnout among coaches from a qualitative methodology. In a third communication Henrik Gustafsson will present his researches on perfectionism and athlete burnout, and introduce the contextual factors of burnout by examining the moderating role of perceived parent-initiated motivational climate.

In a second step, the following communications will be interested in the context in which athletes practice and more specifically their perceptions of this context. Silvia Scotto di Luzio will center her communication on the relationships between the sense of community and athlete burnout. Finally, David Trouilloud will conclude the symposium by presenting a study examining the influence of the concordance/divergence between the reflected appraisals and self-perceptions of athletes on their burnout level.

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# A reciprocal effects model of the temporal ordering of motivation and burnout among youth athletes in intensive training settings

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**Keywords**: Burnout, self-determination theory, cross-Lag

## **Introduction**

Youth athletes in intensive training centers seem particularly vulnerable to burnout due to the high demands inherent in their situation (Martinent & Decret, in press). Preventing burnout has thus been viewed by several scholars as an important issue. Self-determination theory (SDT; Deci & Ryan, 2000) is a useful theoretical framework to examine the potential motivational antecedents of athlete burnout. It is expected that motivation will predict athlete burnout over time. Nevertheless, the prevalence of correlational studies has prevented the exploration of temporal ordering between motivation and burnout. As a result, longitudinal research designs are needed to disentangle the temporal ordering of motivation and burnout (Martinent & Decret, in press).

## **Objectives**

Examining temporal ordering between motivation and burnout using a cross-lag panel.

## **Method**

Ninety-four athletes in intensive training setting ranging in age from 15 to 18 years from a variety of sports voluntarily completed self-report questionnaires about motivation and burnout at two measurement occasions (October and May). Because no fixed cut-off criteria exist, researchers have to progress cautiously when classifying athletes as having high or low burnout. It is generally suggested that athletes with mean scores greater than the scale midpoint on the three burnout subscales might be considered as having higher burnout (i.e., 2% of the participants in our study).

## **Results**

We computed three series of models (for each dimension of burnout) with six models in each series (for each dimension of motivation). SEMs fit the data well ( $p > .05$ ; CFI and NNFI  $\geq 0.96$ ; RMSEA and SRMR  $\leq .07$ ). The motivation-burnout relationship varied depending on the type of motivation assessed. The three dimensions of athlete burnout predicted negatively self-determined forms of motivation. Conversely, amotivation and external regulation predicted positively athlete burnout over time.

## **Conclusion**

High levels of amotivation and external regulation may lead to increases in athlete burnout, whereas athlete burnout may precede decrements in self-determined forms of motivation. Particular efforts could be made to help support the basic psychological needs of athletes, thereby leading to decreased controlled forms of motivation (e.g., external regulation) and amotivation, which in turn lead to decreased risk of burnout.

## **References**

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# Thriving versus burned out: tales of two young elite-level coaches

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**Keywords**: Burnout, coaches, elite

## **Introduction**

Working as a professional coach in high-level sports often implies long and inconvenient work hours, limitless dedication for their work and extreme commitment to the performance of their athletes. Many coaches end up experiencing moderate to high degrees of burnout during their careers (e.g., Vealey, Udry, Zimmerman, & Soliday, 1992; Raedeke, 2004).

## **Objectives**

The current study aims at contrasting the experience of two young professional coaches working in the same national team sport context; one is thriving at work while the other coach is discontented and showing signs of professional burnout.

## **Method**

Selected from a population of 385 Scandinavian vocational coaches working in high-level sports, two coaches were chosen for the current study based on contrasting psychological profiles despite working within the same sport federation. One of the coaches had a strong positive profile (upper 10%), showing high degree of vitality and autonomous motivation throughout the season. The other coach developed an exhausted profile during the course of the season (bottom 10%). Both coaches were in the early years of a professional coaching career on the skiing world cup.

## **Results**

Findings from retrospective semi-structured interviews revealed that both coaches were autonomously motivated (Deci & Ryan, 2000) when they started their « dream » job. Both coaches reported experiencing substantial workload and planned on having this job for a limited period of time. However, this sole variable could not explain the development of burnout. When contrasting the experience of the two coaches, the perception of an important work conflict and low support from management seemed to initiate a negative change in perceived competence and autonomy leading one coach to experiencing exhaustion and burnout.

## **Conclusion**

When combined with additional challenges such as work conflict and limited management support, the results of the present study suggested that burnout may develop when experiencing high workload.

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# Perfectionism and burnout in competitive junior athletes: the moderating influence of parent-initiated motivational climate

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**Keywords**: Burnout, elite athletes, motivation, perfectionism, stress

## **Introduction**

Athletes, who exhibit features of perfectionism, are especially likely to report higher levels of burnout. Little research has examined factors that might moderate this relationship. As parent behavior has been identified as both a part of the support structures that may help prevent athlete burnout and a source of pressure associated with athlete burnout there is a need to investigate the interaction of perfectionism and the role of parents in athlete burnout.

## **Objectives**

Acknowledging the importance of parents in youth sport participation, the current study examined whether the motivational climate initiated by parents interacted with dimensions of perfectionism (strivings and concerns) to predict burnout.

## **Method**

Participants were 237 competitive junior athletes (124 male and 113 female aged 16-19) from a variety of sports. Athletes completed the Athlete Burnout Questionnaire (Raedeke & Smith, 2001), the short version of the Multidimensional Perfectionism Scale (Cox, Enns & Clara, 2002), and the Parent-Initiated Motivational Climate Questionnaire-2 (White, Duda, & Hart, 1992). Because no fixed cut-off criteria exist, researchers have to progress cautiously when classifying athletes as having high or low burnout. It is generally suggested that athletes with mean scores greater than the scale midpoint on the three burnout subscales might be considered as having higher burnout (i.e., 4.6% of the participants in our study).

## **Results**

Moderated regression analyses revealed two significant three-way interactions. These indicated that a combination of high perfectionistic concerns and low perfectionistic strivings contributed to higher total burnout and one symptom of burnout (sport devaluation) as perceptions that parents' emphasized success-without-effort increased.

## **Conclusion**

The findings provide evidence of the antagonistic role of this element of an ego-involving climate in the perfectionism-burnout relationship. They also highlight the possibility that reducing this element offers a means of reducing burnout for some perfectionistic athletes.

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# Sense of community and athlete burnout

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**Keywords**: Athlete burnout, sport sense of community, adolescence, motivation, commitment

## Introduction

High-level participation in sport during adolescence can lead to negative consequences as athlete burnout (ABO), syndrome including reduced sense of accomplishment, physical exhaustion and emotional weariness (Isoard-Gautheur, Guillet-Descas & Duda, 2013). ABO occurs when the needs of autonomy, competence and relatedness are chronically frustrated in sport efforts, resulting in a decrease of motivation and commitment. Concerning the prevention of burnout, some studies have focused on sense of community (McMillan, & Chavis, 1986). The sense of community referred to the school is negatively correlated with the school burnout (Royal & Rossi, 1997). As in the school context, the sport sense of community (SSC) may positively influence the well-being of adolescent athletes, protects them from experiences of loneliness and burnout, promotes satisfaction of needs and increases self-determined motivation and commitment. Despite the importance of the SSC, no study has actually examined the link between the SSC and ABO.

## Objectives

The objective is to explore the link between the SSC and burnout, needs satisfaction, motivation and commitment. Particularly we hypothesize that the SSC may reduce the athlete burnout risk.

## Method

100 adolescent athletes (60 boys, 40 girls), aged between 15 and 18 years (M: 16.19; SD: 1.05) participated in this research. They practice individual (40%) and team sport (60%), for on average 11 hours per week (SD: 1.4). Participants completed a questionnaire (T1: October and T2: February) about the following variables: SSC, burnout, psychological needs satisfaction, motivation and commitment. 2% of the athletes at T1 and 3% at T2 were considered as having high burnout (i.e., mean scores greater than 4: "sometimes" on the three ABO subscales).

## Results

Cluster analysis results showed two SSC profiles: 1) strong SSC, characterized by a deep sense of belonging and emotional connection to the sporting community and 2) low SSC. MANOVA results show a significant difference between the two profiles on the identified and integrated regulation. Multiple regression analysis shows that more the SSC is raised in T1 less the adolescents expressed a reduced sense of accomplishment at T2.

## Conclusion

The current research represents a first step in the study about the role of SSC for the prevention of athlete burnout.

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# The degree of concordance/divergence between reflected appraisals and self-appraisals: a predictor of athlete burnout?

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**Keywords**: Athlete, burnout, coach, reflected appraisals, self-appraisals

## Introduction

How athlete perceives him/herself (i.e., self-appraisals) has been identified as a determinant of burnout (e.g., Cresswell & Eklund, 2004). Moreover, how athlete thinks significant others see him/her (i.e., reflected appraisals) is also considered as an additional potential determinant of their cognitions, attitudes and behaviors (e.g., Trouilloud & Amiel, 2011). There may be divergence between reflected and self-appraisals. Athletes may think that their coach see them as more (or less) competent as they think they are. No study explore whether the degree of convergence/divergence between reflected and self-appraisals can predict athletes outcomes such as level of burnout. Athlete burnout (ABO) has been recently defined as a syndrome with three dimensions: reduced sense of accomplishment, physical exhaustion, and emotional weariness (Isoard-Gauthier, Martinent, Mette, Guillet-Descas, & Trouilloud, *submitted*).

## Objectives

To examine the relationships between the degree of concordance / divergence between athletes' self and reflected appraisals of coach about competence, and the three dimensions of ABO.

## Method

A sample of 378 athletes (69.84 % of males;  $M_{age}=21.13$  [ $SD=3.73$ ];  $M_{exp}=9.94$  [ $SD=5.88$ ]; 3.69% with scores greater than 4: "sometimes" on the ABO subscales) completed the ABO Scale (Isoard-Gauthier et al., *submitted*), the Perceived Competence in Life Domains Scale (Losier, Vallerand, & Blais, 1993), and the athletes' reflected appraisals of coaches scale (Trouilloud & Amiel, 2011).

## Results

Path analyses were conducted, with the three dimensions of ABO as dependent variables, athletes' sex as covariate, and level of convergence / divergence between reflected and self-appraisals (i.e., the delta between these two variables) as independent variable. Model revealed good fit indices (i.e., AGFI = .95; TLI = .94; CFI = .99; RMSEA = .06 [.00; .13]). Results indicated that the degree of convergence / divergence between reflected and self-appraisals have a non-linear relationship with two dimensions of burnout: reduced sense of accomplishment and emotional weariness.

## Conclusion

The current study broadens previous knowledge on socio-cognitive correlates of ABO by showing that a strong divergence between reflected and self-appraisals is linked to higher levels of ABO.

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# Approach and avoidance: new perspectives in physical activity and motion

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**Keywords**: Achievement goals, affects, dynamics, embodiment, stereotype

## Overview

*“Of the many conceptual distinctions present in psychology today, the approach-avoidance distinction stands out as one of, if not, the most fundamental and basic”* (Elliot, 2008, p. xi). Therefore, it is not surprising that this topic aroused the curiosity of researchers in various field of psychology, including sport and exercise psychology. In accord with Lewin (1935), Elliot (2008, p. 3) defines approach motivation as *“the energization of behavior by, or the direction of behavior toward, positive stimuli (objects, events, possibilities)”*, and avoidance motivation as *“the energization of behavior by, or the direction of behavior away from, negative stimuli (objects, events, possibilities)”*. In spite of the large body of literature pertaining to approach and avoidance, a number of questions remain unsolved: How do approach and avoidance patterns emerge and vary over time? What is the impact of their variations on affects, motivation, and achievement? Are approach and avoidance always adaptive and maladaptive, respectively? As “fundamental and basic” patterns, how can they be rooted in our body and our movements? Here are some typical questions that the four communications of the present symposium attempt to address.

Borrowing the dynamical systems perspective, C. Gernigon conceptualizes approach and avoidance as competing attractors whose strengths result from the integration of goal-related information about competence expectancies, benefit for the self, and threat for the self. Pursuing the dynamical perspective, D. E. Conroy then treats achievement goals as time-varying phenomena and examines how goal variations may relate to affects and performance. Then, based on the regulatory fit assumption, A. Chalabaev, E. Dematte, and P. Fontayne challenge the assumption that performance-avoidance is always associated with maladaptive achievement patterns by testing whether—in a context of stereotype threat—this type of goal can be associated with adaptive motivational and achievement patterns. Finally, based on the theories of embodied language, S. Freddi, J. Esteban, and V. Dru address the question of the coupling between the approach-avoidance distinction as well as semantics cues of verticality, on the one hand, and the dimensions of valence and dominance of affective feelings, on the other hand.

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# Toward a dynamical systems perspective on approach and avoidance in sport and exercise

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**Keywords:** Dynamical systems, competence, benefit, threat

## **Introduction**

Achievement goals are theorized as complex systems that integrate goal-related information that fosters competence expectancies and perceptions of benefit and threat for the self (Gernigon, 2013; Gernigon, Vallacher, & Nowak, 2012). Approach and avoidance behaviors that emerge from this integration can be conceptualized as two competing fixed-point attractors whose shape can account for typical characteristics of goal involvement such as resistance, oscillation between approach and avoidance, and reversal.

## **Objectives**

This communication aims to present (a) an integrative model of approach/avoidance involvement in achievement contexts, based on the nonlinear dynamical systems theory, and (b) first pieces of evidence of the relevance of this model that were yielded by two recent studies.

## **Method**

The shape of the landscape of approach and avoidance attractors is described by a potential function wherein a control parameter,  $k$ , results from the combination of competence expectancies, benefit for the self, and threat for the self. A first study (Gernigon, Klosek, & Montigny, 2014) compared the predictive properties of  $k$  with those of Elliot and Murayama's (2008) four-goal framework with respect to students' self-determined motivation and achievement in sport sciences studies. A second study (Riou, Boiché, Ninot, & Gernigon, 2014) tested whether the value of  $k$  associated with the perspective of having to carry out a series of specific motor tasks predicts ageing people's involvement in regular physical activity.

## **Results**

The first study showed that the control parameter  $k$  and mastery-approach goals predicted students' self-determination for sport sciences studies, whereas  $k$  was the only predictor of their achievement. The second study showed that  $k$  was the best predictor of ageing people's involvement in physical activity.

## **Conclusion**

Beyond these first empirical supports to Gernigon et al.'s model, the dynamical part of this model remains to be tested through the variations of  $k$  over time.

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# The temporal dimension of achievement motivation

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**Keywords:** Intraindividual, within-person, task, ego

## **Introduction**

Achievement motivation can be viewed through Cattell's (1952) data box as a reflection of people, variables, and occasions; however, research has focused largely on the first two dimensions of this space. Since the seminal work of Atkinson and Birch (1957), the third dimension, reflecting temporal variation in individual differences, has received less attention in achievement motivation research despite time being critical for understanding dynamic processes such as motivation.

## **Objective**

This presentation will illustrate how attending to the temporal dimension of motivation can shed new light on how achievement goals unfold to influence affect and behavior.

## **Method**

This presentation will use examples from two published studies involving intensive longitudinal data on motivation, affect, and behavior during an achievement pursuit. The first study focused on fluctuations in goals during a round of golf and how they interacted with performance feedback to influence affect and subsequent performance (Schantz & Conroy, 2009). The second study focused on how round-to-round achievement goal manipulations during a video game impacted self-conscious emotional responses to feedback (Rebar & Conroy, 2013).

## **Results**

Study 1 revealed that fluctuations in  $2 \times 2$  achievement goals were unassociated with performance but were linked with changes in affective valence, arousal, and dominance, although fear of failure moderated some of these associations. Study 2 revealed that experimentally-manipulated performance goals amplified self-conscious emotional responses to performance feedback. Specifically, performance-approach goals increased pride following normative success feedback and performance-avoidance goals increased shame following normative failure. Mastery goals did not impact self-conscious emotions.

## **Conclusion**

Treating achievement goals as time-varying phenomena exposed the dynamics of affective and behavioral micro-processes during achievement strivings. The use of intensive longitudinal data also clarified the temporal precedence of motivational processes in relation to their putative outcomes. Emphasizing time-varying processes will stimulate new understanding of achievement motivation.

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# Avoidance motivation in a threatening context: consequences on motivation and performance in physical education classes

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**Keywords**: Stereotype threat, avoidance motivation, regulatory fit

## **Introduction**

According to stereotype threat theory (Steele, 1997), individuals may feel threatened when they suspect they could be judged on the basis of negative stereotypes. Over fifteen years of research have allowed a better understanding of the consequences of stereotype-induced threat. Scientists now strive to identify factors that may tackle these inequality-producing mechanisms. The present research falls within this approach, and focuses on a specific factor: regulatory fit (Higgins, 2000). According to this perspective, proposing an avoidance strategy to perform the task may fit with the avoidance goal triggered by stereotypes. In turn, this fit may enhance performance. Although this phenomenon has been observed in numerous studies, little is known about its consequences.

## **Objectives**

Based on tentative evidence that regulatory fit may enhance intrinsic motivation (Higgins et al., 2010), the aim of this study was to better understand the motivational consequences of regulatory fit. We predicted that inducing a performance-avoidance goal context would enhance performance of stereotyped individuals along with their self-determined motivation.

## **Method**

This hypothesis was tested among high school students in physical education classes in a 2 (sex) x 2 (stereotype threat vs. control) x 2 (performance-avoidance vs. performance-approach goal) factorial design. After having completed a pretest soccer slalom, participants were told that the study was about gender (or individual) differences in performance. They were told to try to be (avoid being) part of the best (poorest) performers. Then they completed the slalom again and reported their motivations using the Situational Motivation Scale (Guay et al., 2000).

## **Results**

ANOVAs showed 3-way interaction effects on performance and motivation. More particularly, among females, and in accordance with our hypotheses, we observed an interaction effect between stereotype threat and performance goal context: when stereotype threat was coupled with a performance-avoidance goal context, this led to increased performance and decreased controlled motivation.

## **Conclusion**

These findings highlight novel motivational consequences of regulatory fit. Moreover, they suggest that framing school tasks in an avoidance manner may be beneficial in specific contexts.

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# Embodied language with emotion: language about approach-avoidance and vertical motion to differentiate valence from dominance

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**Keywords:** Dominance, embodiment, language, motion, valence

## Introduction

According to theories of embodied language, language comprehension involves the motor system (Guan et al., 2013) and grammatical structure of language (nouns vs. verbs) offers also some interesting distinctions leading to different affective judgment (Foroni & Semin, 2009). Therefore, while studies have shown that affect may be measured through many dimensions such as valence, arousal and dominance (Fontaine et al., 2007), valence and dominance have been commonly connected. However, some recent research tends to show that dominance is linked to motion as a simulation of action compared to inaction (Keltner et al., 2003), whereas valence is linked to the spatial cues described by motion (Meier & Robinson, 2004).

## Objectives

These developments would consider differently valence and dominance feelings through language within approach and avoidance tendencies (Study 1) and verticality (Study 2). First of all, we expect a significant main effect of the avoidance/approach and *DOWN/UP* dimensions. Therefore, since dominance is more frequently represented with embodied cues than valence, we expected that dominance feelings would be lower than valence ones for nouns and adjectives and higher than valence for verbs.

## Method

Participants in Studies 1 (n = 133) and 2 (n = 151) were invited to rate their affective feelings along valence and dominance scales about different words (nouns/adjectives vs. action verbs) connected to avoidance and approach tendencies and to verticality (*DOWN/UP*). Four items were used for each interaction of words and direction of motion.

## Results

The results of the two studies showed that differences in valence and dominance feelings were enhanced within action verbs compared to nouns and adjectives. However, the overall results showed that valence feelings were salient for embodied cues associated to a linguistic vertical metaphor, whereas dominance feelings were salient for embodied ones connected to linguistic avoidance and approach tendencies.

## Conclusion

These results offer a useful understanding of the world of emotion with some embodied and linguistic orientations and they propose novel considerations about theories of embodiment connected to language.

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## **Impulsive versus reflective precursors of physical activity: evidence of the double-dissociation pattern hypothesis**

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**Keywords:** Physical activity, sedentary behavior, Reflective-impulsive model, double-dissociation pattern

### **Introduction**

Promoting regular physical activity (PA) is part of the public health priorities given its extensive health benefits, but low participation rates still remain. PA-related thermogenesis can be decomposed into intentional/deliberative PA (e.g., sport or scheduled PA) and unintentional/spontaneous PA (e.g., activities of daily living) (Levine, Eberhardt, & Jensen, 1999). Spontaneous PA account for substantial energy expenditure, and is a primary mechanism of resistance to fat gain following overfeeding (Levine et al., 1999). However, no current information is available on the processes involved in the regulation of this kind of behavior. In recent years, dual-process models such as the Reflective-Impulsive Model (RIM, Strack & Deutsch, 2004) have suggested a double-dissociation pattern in which impulsive processes such as approach-avoidance tendencies, should predict spontaneous behavior, whereas reflective processes such as intention, should predict deliberative behavior, and not vice versa.

### **Objectives**

The aim of this study was to examine whether impulsive versus reflective processes differently predict the force placed in PA task requesting a volitional (i.e., maximal strength task on a hand dynamometer) or a spontaneous (i.e., pressure holding task aimlessly) effort.

### **Method**

Participants (n=91) completed a questionnaire assessing their intentions to adopt PA behaviors over the next week. They also completed a manikin task to assess impulsive approach-avoidance tendencies toward PA and sedentary (SB) behaviors. Immediately after the manikin task, participants were asked to realize the two PA tasks described above.

### **Results**

Hierarchical regression analyses revealed that intentional effort was positively predicted by PA intentions, but was not predicted by impulsive processes. By contrast, spontaneous effort was positively predicted by impulsive approach towards PA and negatively predicted by impulsive approach towards sedentary behaviors, but was not predicted by PA intentions.

### **Conclusion**

These findings provide the first direct empirical support of the double-dissociation pattern in the PA context. They supported the incremental validity of the impulsive processes on PA behavior, as well as to embed it neatly within a dual-system theoretical framework. Implication for health behaviors theories and behavior change interventions will be discussed.

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## **Eating-behavior and psychological parameters in male first-year physical education students**

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**Keywords:** Eating attitude, emotional intelligence, coping, emotional eating

### **Objectives**

This study explores the prevalence of disordered eating attitudes, defined as a group of abnormal eating behaviors such as restrictive eating, fasting, laxatives, and vomiting (Nattiv et al. 2007), in a sample of male first-year university students engaged in a physical education program and examines the relationships between emotional intelligence, coping, and emotional eating in relation to disordered-eating (DE) attitudes.

### **Method**

A total of 140 students completed the following questionnaires: the Eating Attitudes Test, the Bar-On Emotional Intelligence Questionnaire, the Coping Inventory Stress Scale, and the Dutch Eating Behavior Questionnaire. The number of participants represented 70% of the male students registered in this discipline at the authors' university.

### **Results**

Twenty percent of students presented DE attitudes even though they were of normal weight. The Bar-On EQ-I results indicated that students with DE attitudes had lower levels of emotional intelligence (EI) scores than students without DE attitudes (control group). Moreover, they scored higher than the control group on coping styles such as avoidance-oriented coping, emotion-oriented coping, and emotional eating. The DE group presented a positive correlation between DE attitudes symptoms and both avoidance- and emotion-oriented coping but a negative correlation between DE attitudes and task-oriented coping. There was also a significant negative correlation between DE attitudes and EI score. Another result from this group indicated an association between EI score and emotional-eating score ( $p < .05$ ,  $r = -.44$ ) and also a positive correlation between emotion-oriented coping and emotional eating ( $p < .01$ ,  $r = .47$ ).

### **Conclusion**

The findings highlight future research potential on the role of emotions and EI in DE symptoms, which may be beneficial in the context of collaborative care management intervention.

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# Is there a right time to learn habits?

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**Keywords**: Health, habits, learning, stress, cortisol

## **Introduction**

To become an habit, a behavior needs to be repeated. First, the behavior is goal-directed and then, through repetition, it becomes automatic (Neal, Wood, & Quinn, 2006). It has been shown that the formation of habit varies a lot from one person to another to reach automaticity (Lally, van Jaarsveld, Potts, & Wardle, 2010).

## **Objectives**

The main objective of the study is to determine if it is easier to create habits in the morning or in the evening. It has been shown that the endogenous cortisol level has a strong connection to memory formation (de Quervain, 2010). Therefore, we hypothesized that habits learning would be easier on the morning than in the evening, when the endogenous cortisol level is at its peak value.

## **Method**

Participants were 46 students from a French University. Two groups were randomly created. Participants were instructed to repeat a stretching behavior every day in their bed either when they woke up or when they went to bed. Everyday during 90 days, they had to answer the four questions of the automaticity subscale of the Self Report Habit Index (Gardner et al., 2012) using a smartphone application. In addition, cortisol salivary samples were collected four times during the experiment.

## **Results**

Based on slope analysis of the learning curves, our results indicated that students who were in the morning group learned the stretching behavior faster ( $M=.92$ ,  $SD=.42$ ) than those in the evening group ( $M=.77$ ,  $SD=.29$ ).

## **Conclusion**

The present study indicates that it is easier to create habits in the morning. Additional analysis will examine if endogenous cortisol mediates this effect.

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# How positive psychology can help sport psychology

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**Keywords**: Positive psychology, Perma model, Motivation, optimism, character strengths

## **Introduction**

Positive psychology researchers are involved in understanding human flourishing (Seligman & Csikszentmihalyi, 2000). We believe that athletes well-being entails feeling good (Jones, 2003), engaging in life, feeling connected to others, having a sense of purpose, and achieving things (Seligman, 2013). To better understand how these concepts interact with sense of well-being, it is necessary to measure multiple dimensions. The purpose of this study is to examine the correlations between self esteem, Perma questionnaire, motivation, obsessive and harmonious passion, optimism and characters strengths (Peterson & Seligman, 2004) on a population of rugbyplayers.

## **Objectives**

Our objective is to study correlations between the different variables and draw directions of future research in understanding how positive psychology and sport psychology can join.

## **Method**

Eighty (80) French rugby players completed a questionnaire including French version of Rosenberg's Self Esteem scale", (Vallières & Vallerand, 1990), Perma questionnaire (Seligman, 2013 ; Martin-Krumm, in press), Motivation scale in sports (Pelletier, Fortier, Vallerand, Tuson, & Brière, 1995), Obsessive and harmonious passion scale (Vallerand, Blanchard, Mageau, Koestner, Ratelle, Léonard, Gagné, & Marsolais, 2003), LOT-R (Trotter, Mageau, Trudel, & Halliwell, 2008) and Sports'Motivation'Scale (Brière, Vallerand, Blais, & Pelletier, 1995). Statistical analyses were conducted with Statistical Package of Social Science (S.P.S.S. 17).

## **Results**

Preliminary results on a sample of 36 male rugbyplayers (M=20,87) shows Pearson correlations between optimism and life satisfaction (  $r=.514^{**}$ ), life satisfaction and self esteem (  $r=.459^{**}$ ), and optimism and self esteem (  $r=.739^{**}$ ). We also find a significative correlation between harmonious passion and internal motivation (  $r=.584^{**}$ ). Other results on a larger sample will be presented.

## **Discussion:**

Methodological limits and perspectives of this work will be discussed. Future directions will be drawn.

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## The mental strength of elite athletes

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**Keywords:** High level sport, mental preparation, doping

Elite athletes, by the training load and the competitive logic they are facing are led to live critical psychological situations (e.g., experiences of failures, injuries, stress, interpersonal conflicts). Moreover, the World Anti-Doping Agency invites to question about the mechanisms explaining that some athletes dope, despite the anti-doping rules and risks known to health, and that others choose not to do so. During their career and by the complex interplay of multiple factors, the athletes of exception develop psychological resources that will enable them to have the "mental strength" required the D-day.

This workshop aims to highlight the experience of elite athletes around the notion of "mental strength" and to answer in particular the following questions:

- How elite athletes define their mental strength? What psychological resources do they need to cope with critical situations inherent in high-level sport?
- How do develop these psychological resources? Thanks to what persons, what experiences?
- What is the place of the mental preparation in this development? Is the 'mental strength' trainable?
- What are the psychological resources required to withstand the doping?
- What are the future perspectives to improve the programs of prevention?



## **Aging and physical activity: psychological barriers and promising avenues related to exergames**

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**Keywords**: Physical activity, elderly, aging stereotypes, exergames, cognitive aging

### **Overview**

Physical activity is an important factor for successful aging as it helps to prevent the cognitive and functional decline associated with the aging process (Netz et al., 2005). However, older adults are generally not sufficiently active according to what is recommended. Self-perceptions and aging stereotypes have been shown to affect health (Levy, 2009), and might also explain the lack of engagement in physical activity in elderly. Exergames is a new technology of high potential that offers aerobic activity in an enriched environment (Anderson-Hanley et al., 2012). The purpose of this symposium is twofold: (a) to determine the role of psychological barriers explaining physical activity in older adults, and (b) to identify relevant strategies to enhance physical activity adherence and maintenance among this population. This symposium consists of five presentations. The first presenter will focus on the endorsement of aging stereotypes in the domain of physical activity among active older adults. The second presenter will examine perceived barriers and barriers of change to specify and facilitate interventions with aging populations. The last three presenters will explain the role of Exergames among Alzheimer's patients, Mild Cognitive Impairment patients, and healthy elderly. The interaction with the audience aims at discussing the relationship between psychological barriers and Exergames.

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## Beyond stereotype internalization: an ego depletion account of aging stereotypes effects in the physical activity domain

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**Keywords:** Aging stereotypes, physical activity, subjective vitality, multilevel growth modeling

### **Introduction**

A growing body of research has started to question the assumption that the aging process can be explained exclusively as a physiological process of inevitable decline (Levy, 2009). Stereotype internalization approach considers that aging stereotypes may also substantially affect health, by impacting self-perceptions of aging. This study focused on stereotypes in the domain of physical activity (PA), which include negative beliefs that older adults are too old to be physically active.

### **Objectives**

The study aimed at examining a pathway of stereotype influence that complements the stereotype internalization approach. We tested whether endorsement of aging stereotypes may decrease mental energy for self-regulation (subjective vitality) among active older adults, illustrating an ego depletion effect (Baumeister et al., 2000). We reasoned that endorsing negative stereotypes could be in conflict with the goal to stay physically active, necessitating self-control resources.

### **Methods**

**Participants.** 193 retired individuals (24 men and 168 women) aged from 60 to 92 years ( $M = 73.22$  years;  $SD = 7.53$ ) regularly participating in organized PA completed the measures on three occasions during a 9-months period. **Measures.** (a) Aging stereotypes in PA; (b) subjective vitality; covariates included : (c) self-perceptions of aging; (d) self-determined motivation; (e) physical self-worth; (f) level of PA; (g) participation in organized PA (hours/week); (h) self-rated health; (i) perceived loneliness; and (j) sociodemographic variables (age, gender, and education).

### **Results**

Multilevel models tested whether within-person variation in aging stereotypes endorsement across waves predicted subjective vitality, after controlling for covariates. Results of the final conditional growth model showed that within-person changes in endorsement of aging stereotypes relative to psychological capacities ( $b = 0.16$ ,  $p < .01$ ) positively predicted subjective vitality, and that between-person mean differences in endorsement of aging stereotypes relative to PA benefits ( $b = 0.22$ ,  $p < .05$ ) positively predicted subjective vitality. These predictors accounted for 36.8% of the within-person variance and 35.2% of the between-person variance in subjective vitality.

### **Conclusion**

This study confirmed that endorsement of aging stereotypes relative to PA predicted subjective vitality among active older adults, after controlling for self-perceptions of aging. These results suggest that stereotypes may affect health-related outcomes through other processes than those related to stereotype internalization, and notably through ego depletion effects.

# Barriers to change: a key element to help elderly to engage in regular physical activity

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**Keywords**: Adherence, aging, decisional balance, barriers, regular physical activity

## ***Introduction***

Among determinants of exercise non-adherence, perceived barriers feature prominently in major theories used to examine change in health behavior. In the Transtheoretical model, authors claim that overcoming barriers is an effective construct target for facilitating change, but it is not clear when and what kind of barriers should be overcome. Recent studies showed that two kinds of barriers can be described: (1) perceived barriers have been the most common type of barriers examined with respect to adherence in exercise and are defined as barriers that slow or halt completion of an ongoing health behavior (Brawley et al., 1998); (2) barriers to change close to that of actual barriers (Ajzen, 1991) that capture factors that prevent from initiating a health behavior. The former are predominant in early stages of change (between precontemplation [PC] and contemplation [C]) whereas the latter was determinant in late stage (between Preparation and action).

## ***Objectives***

The aim of this study was to replicate the distinction between perceived barriers and barriers to change in order to specify and facilitate interventions with aging population.

## ***Method***

Two hundred and seventy nine elderly ( $M = 74$  years; 119 males), not practicing regular exercise, completed a series of questionnaires including decisional balance, perceived barriers, barriers to change and stages of change. According to Cardinal's recommendations, we elaborated two questionnaires intended to distinguish barriers to change from perceived barriers. These questionnaires were validated for this French population.

## ***Results***

We conducted a series of four planned comparisons analyses to examine the variation of perceived barriers and barriers to change as a function of stage of change. Scores on barriers to change were significantly higher between pre-action and post-action stages ( $F(1, 261) = 4.74, p < 0.05$ ) but not inside pre-action stages (PC and C). In contrary, scores on perceived barriers were significantly higher in pre-action stages ( $F(1, 261) = 5.33, p < 0.05$ ) compared with post-action.

## ***Conclusion***

These results suggest that to stimulate movement from the early stages of change, a greater emphasis may be needed on reducing perceptions of barriers. Interventions suggest increasing pros to get people to think about change, followed by decreasing perceived barriers to allow the behavior to change. However, in Contemplation and Preparation stages, reducing perception of barriers also include decreasing the barriers to change in order to facilitate action (Bozionelos & Bennett, 1999; Godin & al., 1991).

# **Aerobic activity and cognitive enrichment in Alzheimer's patients: the role of Exergames**

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**Keywords:** Aerobic activity, cognitive enrichment, Alzheimer's disease, serious game

## ***Introduction***

Regular physical aerobic activity and enriched environment are two methods derived respectively from the metabolic hypothesis (Dustman et al., 1994) as well as from the cognitive enrichment hypothesis (Hertzog et al., 2008). Their effects on aerobic fitness, cardiorespiratory function, brain structure and cognition are clearly established in the aging process in humans and animals. In the field of Alzheimer's disease (AD), these methods might decrease mitochondrial, amyloidogenic and tau pathophysiological development.

## ***Objectives***

This communication summarizes the literature on some biological mechanisms involved in AD and their evolution in the context of non-pharmacological interventions. In this line, the role particularly of Exergames will be discussed.

## ***Method***

Several studies of aerobic activity and cognitive enrichment in older animals, in animals with AD as well as in elderly and Alzheimer's patients have been carried out. First, animal studies allowed us to identify biological age and disease-related mechanisms that seemed to be impacted by these training methods. Secondly, human studies would allow us further to verify usability of these methods and their effects.

## ***Prospects and Project (results)***

Concerning physical activity, motivation and organizational constraints appear to be the main study limitations (Schutzer & Graves., 2004). Hence, in order to make physical activities more attractive to elderly people, Exergames (active video games) are more and more developed and launched on the market. These new technologies, of high potential, offer simultaneously aerobic activity in an enriched environment (Anderson-Hanley et al., 2012; Maillot et al., 2012). Intervention research on the feasibility and the effects of Exergames for Alzheimer patients have to be investigated.

## ***Conclusion***

We propose to use serious (Exer)games to stimulate Alzheimer patients. Two serious games: "X-torp" and "L'aidant de la maire", which we developed specifically for Alzheimer's patient, combine high intensity aerobic activity and enriched environment into a playful and accessible therapy. Intervention research on the feasibility and the effects of these Exergames for Alzheimer patients will be investigated.

# Exergames training and cognitive aging

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**Keywords**: Physical activity, video games, aging, cognitive function, active lifestyle

## ***Introduction***

Epidemiological work suggests that in old age, a lifestyle rich in mental, physical, and social stimulation could have beneficial influences on the level of cognitive performance (Kramer, Bherer, Colcombe). Generalized transfer is relatively rare in studies of learning, but there is clear evidence that regimens involving physical-activity training or video-game playing can result in improved cognitive function in older adults (Anguera et al., 2013; Colcombe & Kramer, 2003). The “exergames” combine game play with significant physical exercise by using physical input devices.

## ***Objectives***

The purpose of the present study was to assess the potential of exergame training based on physically simulated sport play as a mode of physical activity that could have cognitive benefits for older adults. If exergame play has the cognitive benefits of conventional physical activity and also has the intrinsic attractiveness of video games, then it might be a very effective way to induce desirable lifestyle changes in older adults.

## ***Method***

To examine this issue, an active video game training program has been developed using a pretest-training-posttest design comparing an experimental group (24x1 hr of training) with a control group without treatment. Participants completed a battery of neuropsychological tests, assessing executive control (Trail Making Test, Stroop Test, Letter Set Test, Matrix Reasoning Test, Digit Symbol Substitution Test), visuospatial functions (Spatial Span Test, Directional Headings Test, Mental Rotation Test), and processing speed (Cancellation Test, Number Comparison Test, Reaction Time Test, Plate-Tapping Test), to measure the cognitive impact of the program. They were also given a battery of functional fitness tests (i.e., Senior Fitness Test) to measure the physical impact of the program.

## ***Results***

The trainees improved significantly in measures of game performance. They also improved significantly more than the control participants in measures of physical function (i.e., cardio-respiratory fitness) and cognitive measures of executive control and processing speed, but not on visuospatial measures.

## ***Conclusion***

This study suggests that exergame training might be an effective way to promote physical and cognitive improvements among older adults. Indeed, one current health issue is to improve the level of physical activity of elderly adults, particularly with sedentary lifestyle. Thus, exergames could be an entree to vigorous physical exercise and a complement to the conventional physical activity for sedentary older adults.

# The impact of a simultaneous training on cognitive functions in mild cognitive impairment subjects

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**Keywords:** Cognitive and physical training, Mild Cognitive Impairment, memory, executive function

## **Introduction**

Aging may impact cognitive functions. Some elderly persons, diagnosed with Mild Cognitive Impairment (MCI), present more deficiencies on these functions, particularly on executive functions and memory. Considering these deficits, and based on the model of programs of intervention which showed themselves effective with healthy elderly, some works were set up to stimulate the cognitive functions of the MCI, through programs of physical (Davis et al., 2013) or cognitive training (Belleville et al., 2006). Given the intensity of the deficiencies from which patients affected with MCI suffer, it seems interesting to wonder if a simultaneous stimulation of physical activity and cognitive training could show positive and additive effects on the cognitive functions.

## **Objective**

The goal of this study is to assess the potential additive effect in simultaneous training with regard to single cognitive and physical training in executive control and memory, in MCI population.

## **Methods**

Sixty-eight older adults with MCI ( $m_o=76,93 \pm 5,58$  years) were included in a randomized study. 21 participants performed simultaneous cognitive and physical trainings, 17 practiced physical activity only and 16 have been stimulated by a cognitive program only. There were 10 people in a control group without any intervention. Each experimental group used a pretest-training-post-test design (24x1 hr of training). To measure the cognitive impact of programs, participants completed executive control tests on reasoning (Wasi), inhibition (Stroop test), flexibility (trail making test) and memory (Digit Span test; Letter number sequencing test).

## **Expected results**

It is expected that (a) the three different trainings would improve cognition but (b) that the practice of simultaneous cognitive and physical training would entail the best scores of executive control and memory compared to single cognitive or physical training.

## **Conclusion**

First of all, it would be interesting to confirm positive single training's impact and to observe bigger effect in simultaneous training on executive functioning as well as memory in MCI. Secondly, with this promising results, simultaneous stimulation could bring a new way to maximize benefits of training on the elderly MCI's cognition.

# Cortical efficiency in cycling performance

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**Keywords**: Multi-action plan model, graph theory, endurance, attentional strategies

## Introduction

Brain cortical activity is related to exercise preference, mode and intensity in endurance sport such as cycling (Brummer et al., 2011). Based on the multi action plan (MAP) model (Bertollo et al., 2013), we evaluated cortico-cortical functional connectivity related to different attentional focus and perceived effort strategies.

## Objective

We evaluated the cortical efficiency linked to different associative attention-based strategies in endurance cycling based on Graph Theory tenets (i.e. path length and cluster coefficient, small world).

## Methods

Eight cyclists (mean age: 20 years) participated in the study. They performed three time-to-exhaustion test (TET) at their second ventilatory threshold (defined at pre-test using K4 Cosmed), adopting one of the following associative strategies (conditions): (1) external Focus of Attention (FoA) on a metronome reproducing their preferred pedalling rate (2) functional internal FoA on their internal pedalling rate; (3) dysfunctional internal FoA on their muscle fatigue feelings. Ratings of Perceived Exertion (RPE) were collected throughout the test and EEG was recorded during each TET using a 32-channel Asalab system (ANT, Enschede, Netherlands). After band-pass filtering (3-40 Hz) and the removal of artefacts, coherence maps were calculated from EEG in the alpha band (8.5-12.5 Hz) for each TET sub-period categorized on RPE scores.

## Results

Results revealed that a Small World cortical organization was maintained independently of the attention strategy adopted, thus confirming a functional organization combining both local and global efficiency. Functional topology changes were observed for low RPE values (i.e. the first phases of the TET), and during recovery.

## Conclusion

Our findings support the hypothesis that both associative external and internal strategies tend to prompt optimal performance states and specific electrophysiological patterns that lead to superior performance.

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# Quantifying the benefits of physical activity on executive functioning as a function of the complexity of motor planning

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**Keywords**: Executive functions, neuropsychological battery, physical activity

## ***Introduction***

Scientific studies have revealed multiple benefits of regular physical activity (PA) on health. These benefits have been observed at both a physical and a cognitive level. More specifically, executive functioning seems to be the cognitive aspect that benefits most from PA. However, PA effects were revealed only using cyclic activities (e.g., cycling, running, walking), which are movements that have low planning requirements. It is the case that executive functioning will especially be necessary in the planning and execution of motor actions that need to be sequenced through space and time (Cisek et Kalaska, 2010). Hence, we predict that the PA effects on cognition will be amplified with the use of more complex activities that require sequential motor planning as it is the case for rhythmic dancing.

## ***Objectives***

The aim of this study is to propose a neuropsychological battery to test the hypothesis that the benefits of PA on the 3 basic executive functions (Miyake, 2000) depend on the complexity of the proposed physical exercise, i.e., the cognitive resources required to prepare and perform the motor tasks.

## ***Method***

Three groups of 10 sedentary young adults aged 25 to 45 years participated in the study. They required to cycle (cyclic PA), dance (sequenced PA), or watch a documentary (control group). The intensity of the PA was set to a RPE of 13, and each PA session lasted 30 minutes. The battery was used before and after the PA sessions (t+10min; t+24h) and was composed of computer-based tests to evaluate executive functioning as well as the cognitive resistance to fatigue.

## ***Results***

The neuropsychological battery revealed specific benefits of PA depending on the complexity of the exercise. Participants who practiced sequenced PA improved significantly more than those doing cyclic PA: subjects improved (1) resistance to cognitive efforts revealed through a decrease in mean reaction time to stimuli detection, (2) their abilities to update information in working memory, as well as (3) their abilities in motor inhibition and in task shifting.

## ***Conclusion***

The benefits of PA on executive functions are greater when using motor activities that required sequential planning and execution. The follow up study is now targeting the power of sequential PA as a tailored (fun) cognitive remediation tool in adult psychiatry.

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# Interactive brains in juggling dyads: a hyperbrain case study

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**Keywords**: Shared mental models, hyper-brains, electroencephalogram, juggling

## **Introduction**

Recent efforts in social neuroscience have been directed at understanding multi-brain interactions. In effect, research has focused on the dual brain approach, in which hyper-brain functional connectivity is mapped during cooperative actions (e.g., guitar playing) (Astolfi et al., 2011; Sängers, Müller, & Lindenberger, 2012).

## **Objectives**

We aimed to detect the neural schemes underlying the abstract notion of “shared mental models” through electroencephalographic (EEG) mapping of two brains performing a common motor juggling task of increasing difficulty.

## **Method**

Participants were two male semi-professional jugglers (age 20 and 29 years) able to simultaneously juggle up to five balls in the well-established “shower juggling pattern”. The cortical activity of the jugglers was measured with two synchronized 32-channel EEG systems (Asalab and Eegosports, ANT, Enschede, Netherlands) while they established a cooperative interaction by juggling sets of balls to each other. The number of balls juggled simultaneously was increased in fixed steps until reaching maximal capacity. EEG signals were pre-processed with ICA for artifacts removal. Coherence was measured between all channel pairs in the theta and alpha bands (4-8 Hz and 8-12 Hz) to detect functional connectivity across brains. Graph Theory was used to quantify brain functional efficiency in the hyperbrain condition and to characterize the interaction features.

## **Results**

The results revealed that the hyperbrain networks were juggler and frequency-dependent, involving different clusters of areas from the two brains. The observed changes in the type of functional efficiency were related to task-difficulty during the dual (juggling) movement interaction. Specifically, in both the alpha and theta bands, hyperbrain coherence maps and graph analysis revealed a more clustered pattern of connectivity and a more ordered type of efficiency in the easiest condition (3 balls), which tended to vanish with increasing task difficulty. In all, shared mental models appear to shape the neurological states of the juggling dyads.

## **Conclusion**

There is evidence that interactive juggling dyads present synchronized neural activity in the neocortex, which clustered pattern is negatively related to task difficulty.

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# Evolutionary cognitive control during intense exercise

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**Keywords**: Executive functions, cognition, exercise

## Introduction

While it is accepted that acute moderate exercise has a beneficial influence on cognitive performance, exhaustion is a predictable consequence to strenuous exercises that may counteract performance facilitation. Several authors claimed that above a certain level, high exhausting exercises will disrupt cognitive functioning in particular high level of cognitive processing involving executive functions such as response inhibition (McMorris et al., 2009). There is unfortunately a great paucity of research investigating executive function changes during intense exercise prolonged to exhaustion.

## Objectives

The objective of this research was to investigate the evolution of cognitive performance throughout an intense exercise.

## Method

14 moderately trained participants (Maximal Aerobic Power {MAP}:  $261.3 \pm 14.2$  W) performed an inhibition task during a time-to-exhaustion exercise on a cycle-ergometer at a fixed intensity (85% MAP). Behavioural (pre-motor time, error and correction rates), psychological (perceived exertion), muscular (root mean square from the *vastus lateralis*) and cerebral oxygenation measures were continuously recorded until exhaustion.

## Results

Compared to the control condition at rest, results during exercise revealed cognitive control impairment during the final period of the exercise bout, as expressed through delta plot analysis and correction rate. While the achieved results do not support the hypofrontality theory during an exercise condition (Dietrich & Audiffren, 2011), characteristics of decreased hyperfrontality were demonstrated.

## Conclusion

Rather than exercise intensity, exercise-induced progressive fatigue may be the key factor in explaining the evolution of cognitive control efficiency.

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# Brain mechanisms of the flow experience

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**Keywords:** Explicit, flow, implicit, optimal performance, transient hypofrontality

## ***Introduction***

Flow experiences are associated with enhanced or optimal performance. It occurs when one becomes so deeply engrossed in a task and pursues it with such passion that all else disappears, including any sense of the passage of time or the worry of failure. Attention and action in such a flow state seem to flow effortlessly, and the task is performed without strain or effort to the best of the person's ability.

In sports competition, such a performance-enhancing state of mind is highly desirable, for rather obvious reasons. The perfect execution of a skilled movement at the right time can be of extraordinary monetary benefit to a professional athlete, along with a whole host of other perks, such as prestige or social status. It is not surprising then that no effort is being spared in optimizing athletic performance on the part of the people who have a stake in it. This includes the desire to use this somewhat peculiar alteration to mental status known as flow as a way to tap into superior performance, preferably at will.

There is only one minor hitch. We don't know what makes flow come and go, so to speak. Without some decent grasp of how to induce it, preferably on command, and maintain it, preferably in those all-important critical moments, athletes cannot reliably take advantage of it on their way to glory, gold, or other goodies.

There are several reasons why we don't understand the underlying mechanisms, cognitive or neural, of flow experiences. Even compared to other altered states of consciousness – meditation, hypnosis, or daydreaming – flow states have escaped, in more ways than one, the attention of psychologists and neuroscientists. The phenomenon is somewhat of a paradox and remains difficult to explain according to traditional theories of attention and mental effort for the simple reason that they assume that better performance, on any task, is associated with increased conscious effort allocated to that task. Theories of attention and action assume that higher task demands require more effort, both objectively, in terms of caloric consumption by the brain, and subjectively, in terms of perceived mental effort. In flow, however, the opposite appears to be the case. Here the perceived mental effort decreases, sometimes to the point of total effortlessness, yet such seemingly automatic action is associated with superior performance. In other words, increased task demands are met not by an increase in mental effort but by a decrease. In flow states, action is entirely outside of conscious awareness and often described as if it happens by itself, without any effort at all. What, then, might explain how a decrease in mental effort, especially in terms of attentional resources improves task performance? The talk proposes an answer to this question and sketches out the possible neurocognitive mechanisms underlying flow experiences.

## **Objectives**

Recent theoretical and empirical work in cognitive science and neuroscience is brought into contact with the concept of the flow experience. To understand the neurocognitive mechanisms underlying the flow state requires that we fully appreciate the fact that the brain runs two functionally and anatomically distinct information-processing systems, the explicit and implicit systems, and that we rigorously apply the flexibility/efficiency tradeoff that exists between these two systems to the computational problem of skilled motor performance. In addition, the transient hypofrontality theory is briefly outlined, which can account for the phenomenological features of flow experiences, such as, for instance, the merging of awareness and action, the exclusion from consciousness of distractions, the loss of the sense of time passing, and the lack of worry of possible failure. These are all higher-order metacognitive processes that require, in order to be subtracted from consciousness, the downregulation of brain regions, primarily in the prefrontal cortex, that play a key role in the computation of these higher-order thoughts and feelings in the first place.

It is the central proposal of this talk that optimal performance involving a real-time sensory-motor integration task is associated with maximal implicitness of the task's execution. Given that the explicit system is subserved by prefrontal regions, it follows from this proposal that a flow experience must occur during a state of transient hypofrontality that can bring about the inhibition of the explicit system.

## **Conclusion**

Despite the rich descriptions in the psychological literature, next to nothing is known about the brain mechanisms that give rise to exceptional human functioning. In the present talk, the explicit-implicit distinction is applied to the effortless information processing that is so characteristic of the flow state. The explicit system is associated with the higher cognitive functions of the frontal lobe and medial temporal lobe structures and has evolved to increase cognitive flexibility. In contrast, the implicit system is associated with the skill-based knowledge supported primarily by the basal ganglia and has the advantage of being more efficient. From the analysis of this flexibility/efficiency trade-off emerges a thesis that identifies the flow state as a period during which a highly practiced skill that is represented in the implicit system's knowledge base is implemented without interference from the explicit system. A necessary prerequisite to the experience of flow is a state of transient prefrontal hypofunction that enables the brief suppression of the analytical and meta-conscious capacities of the explicit system.

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## Discover the connections between brain activity and body movements with the new innovative techniques for simultaneous recordings of EEG and EMG

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Moderator: Rémi Radel

**Keywords**: EEG, EMG, cortical exploration, body movements, mental state

Improvement of sport performance doesn't depend only on the enhancement of the specific sport technique or a muscle, but also, and especially, on the brain functioning and its interaction with the peripheral structures.

Electroencephalography (EEG) is one of the most common methods for the examination of human brain activity in the fields of cognitive psychology and neuroscience, as it has proved to be a very reliable method for monitoring of changes with a very accurate temporal resolution. Due to the variety of possible analyses (e.g., spectral analysis, event-related potentials, source localization, corticomuscular coherences) this technique allows researchers to test a large range of hypotheses; however, despite of all these advantages, the use of EEG was just until recently very limited in sport psychology. Due to the high susceptibility to movement artefacts of most EEG systems, EEG research always had to be done in shielded labs where other electrical sources could not disturb the data flow. While large in size and heavy in weight the systems were also not easy to move around with.

In this workshop, ANT Neuro will introduce **eegosports**- the new state-of-the-art EEG system that has been specifically designed for sport research. **eegosports** is a very small and light EEG system yet very sturdy to endure physical movements. Thanks to its innovative features the system is highly resistant to movement artefacts. After a brief introduction to the EEG and EMG techniques by Dr. Frank Zanow, Dr. Jozina De Graaf will highlight some examples of the new scope of research which is now possible with this system. After, she will continue with in-depth details on some examples and give the visitors a peak in her current research project, using combined EEG/EMG recording in the study of cortical and neuromuscular reorganization in arm amputees. The workshop will end up with a live demonstration where participants will be able experience the benefits of a simultaneous EEG and EMG recording, while being physically active. During the workshop there will be time dedicated for questions and answers in order to fully benefit from the present knowledge.

## Cancer, physical activity and psychology

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**Keywords**: Physical activity, cancer, psychological benefits, psychological barriers, exercise motivation, fatigue

### **Overview**

Despite a large body of scientific literature on the benefits of physical activity (PA) during and after cancer treatment (e.g., Ibrahim & Al-Homaidh, 2011), people with cancer are not sufficiently active, according to current recommendations (Littman, Tang, & Rossing, 2010). Beginning a PA program can be a significant challenge for anyone, and it can be even more difficult for those dealing with the lingering effects of a cancer and chronic consequences (Pinto & Ciccolo, 2011). The main purposes of this symposium are to identify: (a) the role of fatigue and psychological barriers related to PA participation in cancer patients and survivors, and (b) the individual and contextual factors that might improve PA adherence and maintenance in this population. This symposium consists of six presentations. The first presenter will examine the effects of PA on several psychological variables in lung cancer patients. The second presenter will examine factors contributing to cancer related fatigue after breast cancer surgery. The third presenter will focus on the relationship between cancer patients' profiles and their participation in a PA program. The fourth presenter will examine the association between cancer exercise stereotypes and PA in women with breast cancer. The fifth presenter will focus on the association between health care climate, changes in behavioral regulations, and changes in PA in women with breast cancer. The last presenter will explore the role of sport psychologists in supportive cancer cares. The interaction with the audience will aim at discussing about effective strategies to promote PA in people with cancer and health professionals.

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# Impact of spontaneous physical activity on quality of life and psychological parameters among patients with lung cancer waiting for a lung resection

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**Keywords**: Lung cancer, physical activity, quality of life, depression

## ***Objectives***

People with lung cancer have substantial symptom burden and more unmet needs than the general cancer population. Physical activity interventions has been shown to positively influence quality of life, fatigue and daily functioning in the curative treatment of people with breast and colorectal cancers and lung diseases, as well as in palliative settings. On the contrary, to our knowledge, no data are available concerning the effect on spontaneous physical activity, which is defined as energy expenditure resulting primarily from unstructured mobility-related activities that occur during daily life, on psychological parameters before lung resection. Thus, the aim of this study was to evaluate the effect of spontaneous physical activity on quality of life, including fatigue and sleep quality, and depression state, on patients with lung cancer waiting for a lung resection.

## ***Method***

The level of spontaneous physical activity (PA) was evaluated 7 days before lung resection by wearing a SenseWear Armband® during 3 days among 37 patients (mean age:  $63.8 \pm 2.1$  years) suffering for a non-small cell lung cancer. Two groups emerged from this evaluation: Group 1: patients practicing less than an hour of physical activity (higher than 3 MET per hour) per day; Group 2: patients practicing physical activity more than one hour of physical activity per day. Quality of life and depression were respectively evaluated with EORTC-C30, EORTC-LC13, and Beck questionnaire. Since the two groups had different PA, data on quality of life and depression were compared between the groups.

## ***Results***

Group 2 was active during  $155.0 \pm 95.0$  minutes per day ( $PA > 3MET.h^{-1}$ ). On the contrary, G1 practiced physical activity during  $33.0 \pm 19.0$  minutes. Quality of life of these patients was affected, with high scores in fatigue, cough and insomnia. However, no significant differences between the groups were noted, even if the score of fatigue was higher in Group 1. Scores obtained at the Beck depression questionnaire were equivalent in both groups.

## ***Conclusion***

Contrary to recent results on physical activity intervention including endurance and resistance exercises, spontaneous physical activity  $> 3 MET/hour$  in patients with lung cancer waiting for a lung resection doesn't seem to have positive influence on quality of life, fatigue and sleep quality. Possible explanations could be linked to the lower intensity of PA as compared to physical activity interventions, and to the social interactions induced by physical programs. Further studies are needed including more patients to confirm these hypotheses.

# Fatigue after surgery in breast cancer: neuropsychological contributions

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**Keywords:** Cognitive fatigue, breast cancer, attentional system, vigilance

## **Introduction.**

Cancer-related fatigue (CRF) is one of the most prevalent and burdensome symptoms in breast cancer. Radiotherapy, chemotherapy, surgery, low physical activity, high levels of depression, anxiety, pain, and sleep disturbance are linked to CRF (Dupont et al., 2014). There is also evidence that cognitive functioning may be related to CRF, especially to the attentional system (Chen et al., 2012). However, very few studies have examined the cognitive fatigue contributing to CRF after breast cancer surgery (Bortolon et al., 2013).

## **Objectives**

The purpose of this study was to examine how physical, biological, neuropsychological, and emotional factors contribute to CRF following breast cancer surgery, and particularly the attentional associated variables.

## **Method**

Sixty women after breast cancer surgery fulfilled questionnaires and performed physical and attentional tests. Fatigue was assessed with the *Multidimensional Fatigue Inventory* and emotional distress with the *Hospital Anxiety and Depression Scale*. Four computerized sub-tests of the *Attentional Performance Test* were used to assess cognitive fatigue, including vigilance, alertness, flexibility and working memory. Structural equation models were tested using partial least squares variance.

## **Results**

Reduced vigilance ( $\beta = 0.30$ ), sustained levels of anxiety, depression ( $\beta = 0.59$ ) and pain ( $\beta = 0.23$ ) had a significant influence on CRF, whereas alertness, flexibility and working memory had not ( $p > .05$ ). Contrary as expected, low physical function was not associated with CRF ( $p > .05$ ).

## **Conclusion**

Psychological factors has a stronger contribution to CRF than physical factors in our sample. Cognitive fatigue after a breast cancer surgery relates to a reduction in performance during tasks involving routinely and sustained attentional effort (i.e., reduced vigilance). Cognitive fatigue after a breast cancer surgery includes neuropsychological fatigability.

## **References**

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# Factors influencing the intention and participation in a physical activity program during cancer treatment

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**Keywords:** Participation, intention, cancer, therapy, exercise, sport

## Introduction

Many benefits have been observed from regular physical activity (PA) during cancer treatment. In our first study, we aimed at observing the effects of exercise on metastatic breast cancer patients. Only 6% of the patients had accepted to participate in the program. Despite the recommendations on PA during cancer, many authors have reported the same concern. Personality and motivation are known to have an impact on healthy behaviors. We thus proposed to analyze the impact of these variables on cancer patients. Our second study was based on time perspective (Zimbardo et al., 1999), Five Factor Model (Goldberg, 1990) and prevention/promotion model (Higgins, 1998).

## Objectives

Our goal was to examine the links between psychological variables (i.e., personality, time perspective, promotion/prevention orientation), PA practice and participation/intention to participate in a physical activity program during treatment.

**Method.** Questionnaires (i.e., *French Big Five Inventory*, *Zimbardo Time Perspective Inventory*, *Ricci-Gagnon questionnaire*, a prevention/promotion questionnaire) were distributed to cancer patients. Expected participation n = 150.

## Expected results

We expect positive relationships between time perspective and (a) intention and (b) participation in a PA program. Nevertheless, we hypothesize that a majority of cancer patients won't be as future-oriented compared to the general population, considering the severity of their disease and treatment. Moreover, we suggest that physically active patients before the cancer should respond positively to the intention to be involved in a PA program during treatment.

## Conclusion

Previous studies have been designed to understand psychological processes that may have an impact on participation to an exercise program during cancer. Our study will provide further information. It is now essential to point out the means, based on emerging results, such that most of patients would be aware of PA benefits and would increase their level of practice.

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# Association between cancer exercise stereotypes and physical activity in women with breast cancer

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**Keywords**: Physical activity, cancer, stereotypes, internalization

## Introduction

The *stereotype embodiment theory* (Levy, 2009) suggests that stereotypes are embodied when their assimilation from the surrounding culture leads to self-definitions that, in turn, influence functioning and health. In the context of physical activity (PA), several studies indicated that the more individuals endorsed negative stereotypes, the less they reported exercising (e.g., Emile et al., 2013).

## Objectives

The main purpose of this study was to examine the relationships between cancer exercise stereotypes and physical activity in breast cancer survivors.

## Method

A sample of 320 breast cancer survivors ( $M_{age} = 54.04$ ;  $SD = 12.01$ ) completed a series of questionnaires measuring cancer exercise stereotypes, exercise intention and level of physical activity.

## Results

The model yielded satisfactory fits [ $\chi^2(4) = 8.52$ ,  $p = .074$ ,  $N = 322$ , NNFI = .990, CFI = .995, RMSEA = .059, CI RMSEA = .000/ .115]. The results indicated that (a) stereotypes related to the lack of interest, the side effects of treatment and risks of exercise directly and negatively predicted the PA level, (b) stereotypes related to self-efficacy and benefits of exercise predicted the PA level directly and through exercise intention and, (c) exercise intention directly and positively predicted the PA level.

## Conclusion

Results indicated that cancer exercise stereotypes directly predicted the level of PA in breast cancer survivors. The relationships between stereotypes related to self-efficacy and benefits of exercise and the PA level were both mediated by exercise intention. These findings are consistent with the *stereotype embodiment theory*, and suggest that internalization of stereotypes would explain behavior toward PA in people with cancer. Communication strategies should thus be developed to suppress negative stereotypes and/or activate counter-stereotypes.

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# Health care climate, motivation, and physical activity among breast cancer survivors over time

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**Keywords:** Breast cancer, physical activity, sedentary behavior, motivation, mental health

## **Introduction**

A cancer diagnosis has been described as a teachable moment that can motivate health behavior change (e.g., increase physical activity participation). Yet, few breast cancer survivors are active enough to receive health benefits. Understanding determinants of physical activity (PA) in this population is needed to inform intervention strategies. Drawing on the tenets of Self-Determination Theory, oncology health care providers may be supportive agents of behavior changesince a supportive health care climate may foster more self-determined behavioral regulations, and may lead to increase PA. This proposition has not been examined in an oncology context.

## **Objectives**

To examine the association between health care climate, changes in behavioral regulations, and changes in PA over a 12-month period in women following the completion of systemic treatment for breast cancer.

## **Method**

Data were drawn from the *Life After Breast Cancer: Moving On* study. After completing treatment for breast cancer, 199 women completed the Health Care Climate Questionnaire and demographic questions at baseline. They reported on the Behavioral Regulations in Exercise – 2 Questionnaire (BREQ-2) and wore an actigraph GT3X accelerometer for 7 days at baseline and 12 months later. Residual change scores were computed for motivation and PA. Regression analyses were conducted using Preacher and Hayes multiple mediation macro while controlling for personal and cancer-specific factors.

## **Results**

Autonomous (intrinsic plus identified) regulation and moderate-to-vigorous PA significantly ( $p \leq .05$ ) decreased from baseline to 12 months. Amotivation, external, and introjected behavioral regulations were relatively stable over time. Health care climate was significantly positively related to change in autonomous and introjected regulation. Controlling for age, stage of cancer and time since diagnosis,introjected regulation change scores significantly mediated the association between health care climate and moderate-to-vigorous PA change scores ( $R^2$  adj = 0.12; point estimate = -.02; BCa CI = -0.07 to -0.01).

## **Conclusion**

Perceived autonomous health care climate for PA appears to foster introjected regulation in women recently treated for breast cancer, which in turn has a negative impact on their PA levels. More research is warranted to better understand how the health care climate is established and to identify strategies to decrease introjected regulation in this early cancer survivorship period.

# Efficacy of exercise during breast cancer treatments

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**Keywords:** Comprehensive care, cancer, non pharmacological intervention, clinical trials

## **Introduction**

Behavioral interventions have been shown to decrease side effects of some treatments in cancer such as fatigue, reduce comorbidities risk (e.g., depression, obesity), improve health-related quality of life, and reduce both direct (i.e., health care) and indirect (e.g., work absenteeism) costs of disease. In addition, there seem to be collateral benefits in that caregivers, families, and friends of those engaging in such interventions also reduce their non-communicable disease risk. However, impact of existing behavioral interventions has generally been limited by the methodological inadequacies of many of the trials in which they have been tested and a lack of standardization across studies (Ninot, 2013). Then, the role of sport psychology in cancer supportive care is not well known and promoted in Cancer Centre and after treatments.

## **Objectives**

The presentation will illustrate with the APAD study how we can demonstrate the effectiveness of such supportive care with limited additional cost in patients receiving adjuvant breast cancer therapy (Carayol et al., 2013).

## **Method**

The APAD1 study (Carayol et al., 2014) recruited 264 adult breast cancer women with newly, histologically proven, incident and non metastatic breast cancer scheduled for 6 cycles of adjuvant chemotherapy followed by radiotherapy. Patients were randomized either in the experimental arm with tailored exercise training and diet counseling program or in the control arm without any lifestyle intervention.

## **Results**

The preliminary results of the APAD study will be presented. The APAD study is the first randomized controlled trial examining the impact of an intervention involving both hospital and home-based physical exercise combined with face-to-face diet counseling on cancer related-fatigue in patients undergoing breast cancer adjuvant therapy. Any results can be communicated at the moment.

## **Conclusion**

Exercise practice, nutrition and psychological intervention have been advanced as non-pharmacological supportive care to reduce side effects related to cancer and its treatment. But large sample-sized randomized controlled trials are needed to confirm such results.

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## Efficient team actions

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**Keywords**: Interpersonal relationships, group efficacy, team performance, self-talk, situated action

### **Overview**

Team is a widely represented phenomenon in sport. Despite this fact, sport psychology has yet to answer the question why some teams deliver more successful performance and produce higher interpersonal satisfaction among athletes than others. While group cohesion, defined as "a dynamic process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs" (Carron, Brawley, & Widmeyer, 1997, p. 213) is considered to be one important factor contributing to performance, cognitive aspects of team performance depict a complementary view. More specifically, attitudes, efficacy beliefs, role understanding, common goals, and communication are present in any group of two or more people playing sport together. The interactions between these cognitions and motivation, cohesion, performance, and satisfaction in teams sport is yet an under researched area in sport psychology.

The purpose of our symposium is to shed some light on these processes. It will comprise five presentations: the first one (Seiler) develops a framework for a comprehensive theory of teams in sport, and consequences of such a theoretical model for empirical investigations will be presented. Secondly, Antonini Philippe, Lafrenière, Paquet, Mohamed, & Hauw examined the mediating role of team cohesion in a ski mountaineering race between passion and relationship satisfaction and interpersonal conflict with teammates. The third study (Steiner) tested the individual group-efficacy on performance motivation with university students, showing that individualized goal setting in groups should be more studied. Fourth, Graf, Adamer, & Seiler highlight the benefits of a mental technique, and more precisely they investigated the impact of observable self-talk in a team setting. Finally, Mohamed, Antonini Philippe, & Hauw, present an ecological approach in a study about interpersonal relationships in a context of extreme sport.

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# Outline of a theory of efficient teams in sport

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**Keywords:** Team sport, theoretical concept, action regulation, team performance, information processing

## ***Introduction***

So far, social psychology in sport has preliminary focused on team cohesion, and many studies and meta-analyses tried to demonstrate a relation between cohesiveness of a team and its performance. How a team really co-operates and how the individual actions are integrated towards a team action is a question that has received relatively little attention in research. This may, at least in part, be due to a lack of a theoretical framework for collective actions, a dearth that has only recently begun to challenge sport psychologists.

## ***Objectives***

In this presentation a framework for a comprehensive theory of teams in sport is outlined, including the aspect of team cognitions, and its potential to integrate research in the domain of team performance and, more specifically, the following presentations, is put up for discussion.

## ***Method***

Based on a model developed by von Cranach, Ochsenein and Valach (1986), teams are considered to be information processing organisms, and team actions need to be investigated on two levels: the individual team member and the group as an entity. Elements to be considered are the task, the social structure, the information processing structure and the execution structure. Obviously, different task require different social structures, communication processes and co-ordination of individual movements. Especially in rapid interactive sports planning and execution of movements based on feedback loops are not possible. Deliberate planning may be a solution mainly for offensive actions, whereas defensive actions have to adjust to the opponent team's actions. Consequently, mental representations must be developed to allow a feed-forward regulation of team member's actions.

## ***Results and Conclusions***

Some preliminary findings based on this conceptual framework as well as further consequences for empirical investigations will be presented.

## ***References***

Cranach, M.v., Ochsenein, G. & Valach, L. (1986). The group as a self-active system: Outline of a theory of group action. *European Journal of Social Psychology*, 16, 193-229.

# Passion for ski mountaineering and relationship quality: the mediating role of team cohesion

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**Keywords**: Passion, team cohesion, interpersonal relationship, ski mountaineering

## ***Introduction***

A relatively large number of studies have been conducted to examine team cohesion within sport teams. Recent evidences have provided support for the notion that high levels of solidarity within teams promote athletes' well-being and performance. The present article aims to contribute to this line of inquiry by focusing on the association between the motivational construct of passion for an activity (Vallerand, 2010) and team cohesion. Vallerand and colleagues (2010) developed a dualistic model of passion, wherein two types of passion are proposed: harmonious and obsessive passions that predict adaptive and less adaptive interpersonal outcomes, respectively.

## ***Objectives***

While research on passion and relationships has led to important findings, no research, to our knowledge, has evaluated the association between passion and team cohesion. A purpose of the present research was thus to examine the links between harmonious and obsessive passions and team cohesion. Specifically, the present study sought to test a model examining the mediating role of team cohesion between passion and relationship quality.

## ***Method***

Ski mountaineers ( $N = 559$ ) participating in the "Patrouille des Glaciers" completed an initial questionnaire assessing harmonious and obsessive passions for ski mountaineering and team cohesion before the race. After the race, a second questionnaire was completed and assessed participants' relationship quality with teammates and team conflict during the race.

## ***Results and Conclusions***

The findings from the present study suggest that passion matters with respect to relationship quality with teammates. It appears harmonious passion is conducive to better team relationship quality than obsessive passion. Moreover, this process is mediated by team cohesion. Furthermore, harmonious and obsessive passions were positively and negatively related to team cohesion, respectively.

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# Group abilities, individual group-efficacy beliefs and performance motivation: a mediation analysis

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**Keywords:** Group-efficacy beliefs, motivation, group dynamics, mediation analysis

## ***Introduction***

Research has shown that individuals infer their group-efficacy beliefs from the groups' abilities to perform in specific tasks. Group abilities also seem to affect team members' performance motivation adding a psychological advantage to teams already high on task relevant abilities. In a recent study we found the effect of group abilities on individual performance motivation to be partially mediated by the team members' individual group-efficacy beliefs which is an example of how attributes on a group-level can be affecting individual-level parameters.

## ***Objectives***

The study aimed at testing the possibility to reduce the direct and mediated effects of low group abilities on performance motivation by augmenting the visibility of individual contributions to group performances via the inclusion of a separate ranking on individual performances.

## ***Method***

Forty-seven students ( $M=22.83$  years,  $SD=2.83$ , 34% women) of the University of Bern participated in the study. At three collection points ( $t_{1-3}$ ) subjects were provided information about fictive team members with whom they had to imagine performing a group triathlon. Three values (low, medium, high) of the other team members' abilities to perform in their parts of the triathlon (swimming and biking) were combined in a 3x3 full factorial design yielding nine groups with different ability profiles. At  $t_1$  subjects were asked to rate their confidence that the teams would perform well in the triathlon task, at  $t_2$  and  $t_3$  subjects were asked how motivated they were to perform at their best in the respective groups. At  $t_3$  the presence of an individual performance ranking was mentioned in the cover story. Mixed linear models (SPSS) and structural equation models for complex survey data (Mplus) were specified to estimate the effects of the individual performance rankings on the relationship between group-efficacy beliefs and performance motivation.

## ***Results***

A significant interaction effect for individual group-efficacy beliefs and the triathlon condition on performance motivation was found; the effect of group-efficacy beliefs on performance motivation being smaller with individual performance rankings available. The partial mediation of group attributes on performance motivation by group-efficacy beliefs disappeared with the announcement of individual performance rankings.

## ***Conclusion***

In teams low in task relevant abilities the disadvantageous effect of group-efficacy beliefs on performance motivation might be reduced by providing means of evaluating individual performances apart from a group's overall performance. While it is believed that a common group goal is a core criterion for a well performing sport group future studies should also aim at the possible benefit of individualized goal setting in groups.



# Effects of overt self-talk on team partners' other-efficacy and performance in a golf putting task

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**Keywords**: Overt self-talk, team setting, other-efficacy, golf putt performance

## **Introduction**

According to Lent and Lopez' (2002) tripartite view of efficacy beliefs, members of a team form beliefs about the efficacy of their team partners. This other-efficacy belief can influence individual performance as shown by Dunlop, Beatty, and Beauchamp (2011) in their experimental study using manipulated performance feedback to alter other-efficacy beliefs. Participants holding favorable other-efficacy beliefs outperformed those with lower other-efficacy beliefs. Antecedents of such other-efficacy beliefs are amongst others perceptions regarding motivation and psychological factors of the partner (Jackson, Knapp, & Beauchamp, 2008). Overt self-talk could be interpreted as the manifestation of such motivational or psychological factors. In line with this assumption, in an experimental study using dubbed videos of the same segment of a tennis match, Van Raalte, Brewer, Cornelius, and Petitpas (2006) found that players were perceived more favorably (e.g., more concentrated, and of higher ability levels) when shown with dubbed positive self-talk as compared to dubbed negative or no dubbed self-talk.

## **Objectives**

The aim of the study was to examine the possible effects of a confederate's overt self-talk on participants' other-efficacy beliefs and performance in a team setting.

## **Method**

In a laboratory experiment (between-subjects, pre-post-test design, matched by pretest performance) 89 undergraduate students ( $n = 35$ ,  $M = 20.81$  years,  $SD = 2.34$ ) participated in a golf putting task together with a confederate (same gender groups). Depending on the experimental condition (positive, negative, or no self-talk), the confederate commented his or her putts according to a self-talk script. Bogus performance feedback assured that the performance of the confederate was held constant. Performance was measured as the distance to the center of the target, other-efficacy by a questionnaire.

## **Results**

The data collection has just finished and the results of repeated measures analyses of variance will be presented and discussed at the congress. We expect to find higher other-efficacy beliefs and better individual performance in the positive self-talk condition.

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# Une approche située des relations interpersonnelles au cours d'une performance sportive extrême

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**Mots clés**: Activité située, cours d'expérience, performance extrême, relations interpersonnelles

## **Introduction**

De nombreux témoignages suggèrent que l'accomplissement de performances sportives extrêmes telles que les courses d'ultratrail repose notamment sur des relations d'aide, de soutien ou d'encouragement de tiers impliqués auprès des sportifs. Pourtant, on constate que les recherches ont porté exclusivement sur le mental des coureurs (e.g., Throsby, 2013) ou sur les composantes physiologiques de la performance (e.g., Millet & al., 2011), comme si ces accomplissements relevaient d'activités individuelles. L'objet de cette étude était d'analyser ces relations interpersonnelles lors d'une course extrême.

## **Objectifs**

Il s'agissait de caractériser les activités associées à ces relations interpersonnelles lors de la course.

## **Méthode**

Quatre participants impliqués dans le Tor Des Géants, l'une des courses ultra-trail réputées les plus difficiles au monde, ont été volontaires pour participer à cette étude : un traileur (T), et trois accompagnateurs (A). Les données collectées étaient des documents cartographiques permettant de caractériser le déroulement de la course (e.g., parcours, dénivellés), des enregistrements vidéos des passages aux "bases-vie", un entretien semi-structuré décrivant l'histoire de la course comme une suite d'événements réalisés avec T. Ces données ont été traitées pour construire une histoire ou traces des événements de la course de T. Chaque participant a suivi un entretien d'autoconfrontation à ces traces pour décrire leur activité propre lors de la course. Les données ont été retranscrites et codées en unités d'activité. Celles qui portaient sur les relations interpersonnelles ont été analysées.

## **Résultats**

Les modes de relations interpersonnelles se caractérisent par des activités a) d'exécution (e.g., apporter de l'aide à T aux bases vie), b) de surveillance du T (e.g., état de fatigue du T), c) d'interaction entre A (e.g., discussion pour coordonner l'activité des A), d) de diffusion de l'information à T (e.g., confirmer ses impressions), e) de masquage de l'information (e.g., ne pas informer les autres coureurs), et f) de soutien affectif de T. La dynamique d'organisation de ces activités se caractérise par des séquences d'enquête, suivies d'une activité exécutoire (délivrer l'accompagnement) associée à une activité d'évaluation permanente (ajuster l'accompagnement).

## **Conclusion**

Ces résultats montrent que les activités propres aux relations interpersonnelles dans ce contexte compétitif sont constituées d'un répertoire étendu d'actions qui, coordonnées entre elles, aboutissent à de nombreux ajustements au cours du déroulement de la performance.

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# The power of repetition: habits of doing and habits of thinking

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**Keywords**: Habit, attitude-behavior relations, behavior change, self-esteem

## Introduction

Habits are almost unnoticed everyday phenomena. “We do what we do most of the time”. I will start this talk by focusing on what habits exactly are, what they do, and why it is so difficult to change them. I will illustrate this with examples from our research in the areas of environmental, health, and consumer behavior. In the final part of the talk I focus on habits of thinking, and present some work how such habits may have an impact on body image, worrying and anxiety, and self-esteem.

## Objectives

My research aims to reveal the nature of behavioral and mental habits, consequences of habit formation, and perspectives on habit change.

## Conclusion

Habits are more than repetitive behaviors. We often underestimate the consequences of habituation. Traditional approaches to behavior change are likely to fail if target behaviors are strongly habitual, and alternative interventions are required. We do not only have habits of doing, but also habits of thinking. Mental habits may be dysfunctional and cause suffering, but may also be functional and help us to overcome barriers and accomplish our goals.

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## Physical activity and chronic illness

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Moderator: Laura Schuft

**Keywords** : Chronic disease, physical activity, health, well-being, interventions

This workshop aims to highlight the experience of professionals on the topic of physical or sport activities (PSA) destined for people living with a chronic illness. This question is currently a topic of interest for professionals and researchers in the domains of PSA and health, in particular in regards to the recent national plan of “sport health well-being”. Conjointly launched by the French ministries of both sport and health, this plan aims to:

- facilitate access to PSA as a non-medical therapy;
- increase the recommendation of PSA by health professionals;
- efficiently communicate such offers to populations for whom the practice of PSA is esteemed to particularly improve quality of life.

In this context, this workshop considers the experiences in promoting PSA of establishments serving people living with a chronic illness in the Southeast region of France (*region PACA*). Several chronic illnesses will be represented: HIV, heart disease, cancer, obesity and diabetes. The workshop aims to respond to several major questions:

- In what way do PSA appear as beneficial to this population in regard to the specific characteristics of the illness?
- What programs have been established to promote the practice of PSA for this population? What did the programs consist of? What was the promotional approach?
- In what way were these programs adapted to the specificities of the illness?
- How successful was the adhesion to the program, for what profile of persons?
- What are the barriers to remove to incite this population to be more physically active?
- What are the future perspectives for improvement?

## Cheating and doping in sports: psychosocial issues

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**Keywords**: Doping, moral disengagement, sanction, morality, behavior

### *Overview*

The purpose of this symposium is to discuss theory-based research on the factors associated with cheating and doping in sports. Research investigating psychosocial factors associated with doping is important for the fight against doping. A better understanding of these factors would help develop prevention programs for doping. In recent years, researchers have tried to understand cheating or doping in sport by focusing on socio-moral antecedents. Doping in sport has been related to several psychosocial variables (e.g., moral disengagement, self-efficacy, intention, attitudes, and moral norms). In the studies presented in this symposium, doping has been measured as acceptability or likelihood of substance use, performance enhancing drug use, doping intentions, and attitudes towards doping use.

The studies presented in this symposium have used different designs (i.e., observational, experimental, qualitative, cross-sectional) to examine cheating and doping in sports, and investigated a variety of variables associated with doping. The first set of two studies examined cheating and gamesmanship in tennis; the second study investigated whether elite athletes perceive the ban from sport as a deterrent for doping; the third study used interviews to investigate moral disengagement in bodybuilders; the fourth experimentally manipulated health and moral messages to examine their effects on attitudes for doping use; the fifth investigated the effects of causal attributions on susceptibility of doping use; and the sixth examined socio-moral predictors of doping intentions in football. Development of social-moral antecedents in athletes would be interesting strategies to explore within anti-doping education programs.

# Cheating and gamesmanship in youth Italian tennis player: from attitude to behavior

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**Keywords:** Cheating, gamesmanship, tennis player, attitude, behavior

## Introduction

In recent years, psychological researchers have tried to understand cheating in sport by focusing on the active role of the individual, using successfully used social-cognitive theories such as achievement goal theory and self-determination theory (e.g., Corrion et al., 2010; Kavussanu, Seal, & Phillips, 2006; Lee, Whitehead, Ntoumanis, & Hatzigeorgiadis, 2008).

## Objectives

Previous research mainly has focused on attitudes toward cheating. The present study was carried out on cheating behavior.

## Method

In Study 1, 314 young tennis players (76.6% male) between 12 and 17 years old (mean=14.4 yrs, SD=1.5 yrs), participating in the LEMONBOWL 2012, answered questions from Italian versions of (a) Youth Sport Values Questionnaire-2, (b) Task and Ego Orientation in Sport Questionnaire, (c) two prosocial subscales of Multidimensional Sportsmanship Orientation Scale, and (d) two antisocial subscales of the Attitudes to Moral Decision-Making in Youth Sport Questionnaire. In Study 2, 45 tennis matches were randomly selected and analyzed by observers, who rated on a standardized grid the presence/absence of cheating or gamesmanship behaviors from 90 tennis players from those in study 1. Players were encouraged to self-regulate their match, without a referee.

## Results

In line with the value-expressive model of attitudes, results from study 1 showed that moral values and ego orientation predicted antisocial attitudes. Ego orientation mediated the effects of status values on antisocial attitudes. Accordingly, moral values and task orientation predicted athletes' pro-social attitudes. Competence values directly predicted task orientation, and indirectly predicted pro-social attitudes. Furthermore results from study 2 showed a direct and positive contribution of antisocial attitudes toward athletes' actual cheating.

## Conclusion

Results confirmed in the context of youth tennis, the crucial role of sport values and motivational orientation in explaining athletes' attitudes, which in turn, resulted able to predict athletes' actual cheating.

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# Danish elite athletes' perceptions of anti-doping deterrents

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**Keywords**: Doping prevention, doping test, sanctions, gender

## Introduction

A ban from sport following a positive doping test is the main deterrence strategy enforced by WADA. However, researchers have pointed out that other types of sanctions, e.g. social or moral sanctions, are perceived as a greater deterrent by some athletes.

## Objectives

This study examines, inspired by Strelan and Broeckman's (2003) Drugs in Sport Deterrence Model, whether elite athletes perceive the ban from sport as a deterrent, and how they evaluate social, self-imposed and financial sanctions compared with the ban. Furthermore, it is investigated whether athletes of different gender, age, and sports type, as well as with different experience of doping testing, show differences in their perceptions of the various deterrents.

## Method

Data was collected from a questionnaire distributed by email to elite Danish athletes (Overbye, 2013) from 40 different sports (N=645; response rate: 43%). The questionnaire was part of a larger study on elite athletes' perception of doping and anti-doping efforts (Overbye, 2013). In this presentation we report the results of four items related to the deterrent effect of sanctions.

## Results

Athletes perceive the ban from sport as an effective tool to deter drug use. However, the results indicate that social sanctions (e.g. the condemnation by the surrounding world) seem to have a stronger deterring effect on athletes than the ban from sport. This also pertains to a certain degree to self-imposed (e.g. feelings of guilt) and financial deterrents (e.g. financial consequences). Furthermore, age, gender, sport type and previous doping testing experience need to be considered when investigating the deterrent effects.

## Conclusion

Other deterrents beside the ban from sport might be more effective in keeping athletes away from doping. These results may contribute to the design of future anti-doping policies and communication strategies.

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# Moral disengagement and performance enhancing drug use in sport

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**Keywords**: Moral disengagement, morality, doping, qualitative, ethics

## **Introduction**

Moral Disengagement (MD) represents a series of eight psychosocial mechanisms that facilitate the conditional endorsement of transgressive behavior. Importantly, a number of studies have now identified a link between MD and Performance Enhancing Drug (PED) use (e.g., Boardley & Grix, in press; Boardley, Grix, & Dewar, in press). However, to date researchers have not qualitatively investigated use of MD in PED users from sports other than bodybuilding.

## **Objectives**

This study aimed to qualitatively investigate use of MD to conditionally endorse PED use in male athletes from a range of individual and team sports.

## **Method**

Semi-structured interviews were conducted with 12 male PED users aged 19-24 years from the sports of athletics ( $n = 1$ ), swimming ( $n = 2$ ), American football ( $n = 3$ ), boxing ( $n = 1$ ), basketball ( $n = 2$ ), wrestling ( $n = 1$ ), rugby ( $n = 1$ ), and mixed martial arts ( $n = 1$ ). Participants were recruited through purposive sampling.

## **Results**

Deductive content analysis using definitions for the eight MD mechanisms evidenced MD in all athletes. Similar to existing research with bodybuilders (Boardley & Grix, in press; Boardley et al., in press), consistent use of six of the eight mechanisms (e.g., diffusion of responsibility; social diffusion of responsibility for transgressive acts in relatively large groups of offenders) was evidenced. However, in contrast to previous work, attribution of blame (i.e., the perception of being forced to transgress due to perceived provocation by the victim or situation) was also evidenced.

## **Conclusion**

The current findings suggest a range of MD mechanisms may be used to conditionally endorse PED use in various individual and team sports. However, idiosyncrasies in findings for certain sports suggest some applications of MD may be specific to particular sports. As such, future research employing samples with greater representation of athletes from specific sports is encouraged. Such research would generate greater understanding of how MD applies to PED use in specific sports. Future work employing mixed-gender samples is also warranted.

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# Effect of health and moral messages on doping use: a self-affirmation approach

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**Keywords**: Planned behavior theory, social cognition, anticipated regret

## **Introduction**

Doping use is a threat to the integrity and image of sports. In order to design effective interventions to combat doping use it is important to understand the psychological processes underlying this behavior. However, dopers use self-serving ways to explain their behavior (Dunn, Thomas, Swift, & Burns, 2012). Self-affirmation theory can be used to better understand the defensive processing of personally relevant messages and can facilitate the design of more effective and persuasive messages for behavior modification (Harris & Epton, 2009).

## **Objectives**

The present study was designed to investigate the effect of health and moral messages on the decision making process leading to doping use under the view of self-affirmation theory.

## **Method**

The sample of the study consisted of sixty national and international athletes who admitted using doping substances. Participants were equally and randomly assigned into control and experimental groups. Following a self-affirmation manipulation, participants in the experimental group, read two messages; one highlighting the health effects of doping use, and the other explaining how doping use is against the values and spirit of sports. Participants in the control group read the same messages following the completion of a neutral task. Both groups completed a questionnaire regarding athletes' attitudes towards doping use, social norms (descriptive and subjective norms), moral norms, self-efficacy beliefs (perceived behavioral control and situational temptation), and anticipated regret.

## **Results**

The results of Student's t-tests revealed significant differences between the groups on intentions and situational self-efficacy, with participants in the experimental group reporting more adaptive scores. Multiple linear regression analysis showed that the self-affirmation manipulation directly predicted doping intentions, over and above the effect of TPB variables, such as attitudes, PBC and subjective norms.

## **Conclusion**

The study confirmed the effectiveness of a self-affirmation manipulation in influencing the decision making process towards doping use. Also, the study provides implications about improving the effectiveness of health and moral messages against doping users in the context of related interventions and educational campaigns.

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# Effect of causal attributions on susceptibility for doping use: the mediating role of self-regulatory efficacy and moral disengagement

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**Keywords**: Causal attributions, self-regulatory efficacy, doping, elite sport

## **Introduction**

Doping in sport has been shown to be related to several psychosocial variables such as self-regulatory efficacy and moral disengagement (e.g., Lucidi et al., 2008). Some mechanisms of moral disengagement (i.e., attribution of blame; dehumanization; displacement and diffusion of responsibilities) and their application to sport (Corrion et al., 2009; Boardley & Kavussanu, 2008) implicitly refer to external causal attributions which have been suggested to be associated with doping (Barkoukis et al., 2013).

## **Objectives**

The purpose of the present research was to examine the relationship between causal attributions and susceptibility for doping use through the mediating role of self-regulatory efficacy and moral disengagement.

## **Method**

The sample consisted of 126 French (50 males, 76 females) volunteer elite athletes ( $M_{age} = 17$ ;  $SD = 1.56$ ). Participants were invited to complete a series of questionnaire assessing resistive self-regulatory efficacy in Sport, affective self-regulatory efficacy, moral disengagement in sport, causal attributions, and acceptability and likelihood of substance use (Zelli et al., 2010).

## **Results**

The results indicated that: (a) resistive self-regulatory efficacy and moral disengagement mediated the relationships between internal causal attribution and likelihood of substance use; (b) affective self-regulatory efficacy mediated the relationships between external causal attribution and acceptability of substance use.

## **Conclusion**

These results suggest that internal causal attributions would be a protective factor for doping use, through the mediating role of moral disengagement and resistive regulatory efficacy. Development of self-regulatory skills and attribution training in athletes would be interesting strategies to explore within anti-doping education programs.

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# **Socio-moral predictors of doping intentions in football: the mediating role of moral disengagement and anticipated guilt**

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**Keywords:** Moral atmosphere, moral disengagement, moral identity, guilt

## ***Introduction***

Research investigating psychosocial factors associated with doping intentions is essential for the fight against doping. Importantly, elucidating the process through which such links may occur is crucial for our understanding of the doping phenomenon. Based on previous sport morality research (see Kavussanu, 2012), three variables likely to be associated with doping intentions were identified: performance motivational climate (i.e., the situational goal structure as reflected in the coach's behavior), moral atmosphere (i.e., players' perceptions of what is acceptable behaviour within the team), and moral identity (i.e., the importance one places on being a moral person). In addition, doping-specific moral disengagement (i.e., the justifications people use for immoral behaviour) and anticipated guilt were considered as potential mediators of the effects of these three variables on doping intentions.

## ***Objectives***

The present study aimed to determine whether performance motivational climate, moral atmosphere and moral identity predict doping intentions through moral disengagement, and anticipated guilt.

## ***Method***

Male and female elite football players ( $N = 345$ ) were recruited from 30 UK teams and completed a questionnaire either before or after a practice session. The questionnaire assessed doping intentions, performance motivational climate, moral atmosphere, moral identity, moral disengagement, and anticipated guilt.

## ***Results***

Mediation analysis was used to examine our study purpose. We found that performance motivational climate, moral atmosphere, and moral identity predicted doping moral disengagement, which, in turn, predicted doping intentions through anticipated guilt. Thus, players who perceived a high performance motivational climate in their team and a team atmosphere that condoned doping, and scored low on moral identity, were more likely to report higher doping moral disengagement. In turn, players who reported high doping moral disengagement were less likely to report anticipated guilt and more likely to be tempted to use doping substances to enhance their performance in football.

## ***Conclusion***

The socio-moral environment of the team may lead football players to use doping substances to enhance their performance, while a strong moral identity could deter athletes from using doping substances. Both cognitive and affective variables appear to mediate these effects on doping intentions.

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# A test of the dynamical model of goal involvement in regard to ageing people's involvement in regular physical activity

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**Keywords**: Achievement goals, dynamical perspective, ageing, physical activity

## Introduction

Recently, Gernigon, Vallacher, and Nowak (2012) theorized goal involvement in achievement contexts as emerging behaviors that can be depicted within a landscape of approach and avoidance attractors, accounted for by the equation:  $V(x) = kx - \frac{1}{2}x^2 + \frac{1}{4}x^4$ .  $V(x)$  is the function of the different states  $x$  that the variable under study may adopt and  $k$  is a control parameter that specifies the direction and degree of tilt for the potential  $V(x)$ . The control parameter  $k$  results from a second equation:  $k = (c \times b_s) - [t_s \times (1 - c)]$ , where  $c$  is the level of competence expectancies,  $b_s$  is the potential benefit for the self; and  $t_s$  is the potential threat for the self.

## Objectives

The purpose of this study was to test whether the control parameter  $k$  predicts ageing people's involvement in regular physical activity.

## Method

A sample of 54 elderly persons (14 males, 40 females,  $M_{age} = 61.7 \pm 2.00$ ) engaged vs. non-engaged according to their stage of change for regular physical activity (Bernard et al, 2013) observed the demonstration of a circuit of motor exercises with the perspective of performing it next themselves. Afterwards, they filled in the Achievement Goal Motivational Properties Scale (AGMPS; Gernigon, Montigny, & Klosek, 2013) applied to the goal of performing the circuit.

## Results

The 2 x 2 (M)ANOVAs (Sex x Engagement) and follow-up Scheffé tests showed that the engaged group scored higher than the non-engaged group on  $k$  ( $p < .01$ ; partial  $\eta^2 = .19$ ), competence expectancies ( $p < .01$ ; partial  $\eta^2 = .18$ ), and the benefit for the self ( $p < .05$ ; partial  $\eta^2 = .10$ ).

## Conclusion

The index  $k$  pertaining to a specific series of motor tasks, with the largest effect size was the best predictor of elderly persons' involvement in regular physical activity. This finding provides a first evidence for the relevance of Gernigon et al.'s (2012) dynamical model of goal involvement. Furthermore, the dynamical dimension of this model should be tested by testing how goal involvement evolves over time.

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# **Implementation and outcomes of evidence-based exercise programs: the mobilization of town-gown relationships in launching active start**

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**Keywords**: Evidence-based exercise program, exercise self-efficacy, physical self-perception, aging

## ***Introduction***

This project investigated the feasibility and effectiveness of implementing an evidence-based exercise program (EBP). This collaboration between a senior center director and university faculty member exemplified the types of community based-participatory research (CBPR) that have been advocated for in order to implement sustainable EBPs in the community (Wade & Demb, 2009). This paper will discuss the ways that CBPR can lead to more meaningful and sustained changes in community wellness, and have led to a much larger community partnership expanding the availability of EBPs.

## ***Objectives***

The goals of this project were to: 1. determine if this CBPR project would be an effective collaboration and 2. identify changes in exercise stage of readiness, exercise self-efficacy, physical self-perceptions, and functional fitness measures among participants who completed the exercise intervention.

## ***Method***

After gaining approval from the University Institutional Review Board, participants were recruited from the new member orientation at the Senior Center to join the Active Start class. Active Start is an exercise program incorporating cardiovascular, strength, flexibility, and balance components. Participants were assessed pre- and post-intervention using the following measures: Exercise Stage Assessment (Nigg & Riebe, 2002), the Exercise Self-Efficacy Measure (Resnick & Nigg, 2003), the Physical Self-Perception Profile for Adults (Chase, 1991), and The Senior Fitness Test (Rikli & Jones, 2001), measuring upper and lower extremity strength, dynamic and static balance, and flexibility.

## ***Results***

The majority of participants had not participated in any fitness classes previously. 60% of the participants were female (age 65 to 91 years). Participants demonstrated significant improvements in exercise stage of readiness, exercise self-efficacy, physical self-perceptions, and several functional fitness measures.

## ***Conclusion***

In addition to demonstrating that this CBPR was successful in leading to measurable changes in key markers of health and wellness among older adults, this project also demonstrated that partnerships between university faculty and community leaders be successful.

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# How psychological and behavioral team states change during positive and negative momentum

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**Keywords:** Cohesion, collective efficacy, dynamical approach, interpersonal coordination, team dynamics

## Introduction

Momentum turns, in which a team starts progressing (positive momentum) or regressing (negative momentum) in relation to the victory, are often reported in sports. Early and recent theories of momentum assumed that it elicits dynamic changes in psychological and behavioral states (Adler, 1981; Gernigon, Briki, & Eykens, 2010). However, previous research on team momentum has only taken snapshot measures of psychological and performance variables after some (manipulated) momentum period. Therefore, it has remained unknown *how* psychological and behavioral team states actually change during positive and negative momentum.

## Objectives

In the current study we applied a dynamical approach in order to provide insights into the nature of psychological and behavioral changes during positive and negative team momentum.

## Method

Eight teams of two rowers finished two ergometer races against a virtual opponent. In the positive momentum race the team gradually progressed and in the negative momentum race the team gradually regressed in relation to the victory. Each minute, the team members verbally responded to a collective efficacy and a task cohesion item. In addition, their exerted efforts and interpersonal coordination were continuously measured with force sensors and Nintendo Wii cameras.

## Results

We found negative changes in collective efficacy and task cohesion during negative momentum, which were stronger than the positive changes during positive momentum. Team members' efforts rapidly decreased during negative momentum, whereas we found an adaptive sequence during positive momentum. Finally, interpersonal coordination was worse during negative momentum than during positive momentum.

## Conclusion

Our results show that, relative to positive team momentum, negative momentum elicits stronger (opposite) psychological changes and accompanies different (less adaptive) behavioral regulation. Such insights could not be detected with snap-shot research designs. We therefore propose that future applications of dynamical research methods could greatly contribute to the study of real-time psychological and behavioral processes in sports.

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# Self-based achievement goals in competition: the case of the amateur golf domain

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**Keywords**: Achievement goals, competition, social status, golf

## Introduction

Recent research has documented that competitive contexts and status are consistent predictors of other-based goal endorsement (trying to perform better/not worse than other players, Murayama & Elliot, 2012; van de Pol, Kavussanu, & Ring, 2012). A limitation of these researches is that the competitive contexts put a strong focus on normative social comparison, thereby increasing the salience of the « other » component, but leaving unanswered the question of whether competition and status *per se* increase other-based goal endorsement. In the present research, we sought to address this limitation. Contrary to van de Pol and colleagues (2012) who made salient interpersonal competition in a golf task, we focused on the amateur golf context where temporal comparison is also very salient. In such a context, competition and status should affect players' self-based goals (trying to perform better/not worse than one has done in the past).

## Objectives

The aim of the present research was to test whether competition as compared to a training condition and low status, as compared to high status, affect participants' self-approach and self-avoidance (but not other-approach and other-avoidance) goals.

## Method

One hundred and ninety French golf players participated in an on-line experiment and were randomly assigned to a "training" (i.e., participants reported their goals when playing golf without competition) or a "competition" condition (i.e., participants reported their goals in a golf competition). Social status was measured through a subjective measure of game status (i.e., participants were asked to place themselves on a 100-point scale comparing them to other players in their local club).

## Results

Participants in the competition condition reported more self-based (approach and avoidance goals) than participants in the training condition; there was no difference on other-based goals. Moreover, low status players endorsed more self-avoidance goals than high status players; this difference did not appear on other-avoidance goals.

## Conclusion

This study allows showing that depending on the type of competition involved, athletes may not endorse the same achievement goals. In the golf domain, competition and status do not automatically affect other-based goals but rather self-based goals.

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# Validation d'un questionnaire des valeurs motivationnelles appliquées au sport de compétition

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**Keywords:** Valeurs motivationnelles, athlète, instrument de mesure, coaching innovant, performance

## Introduction

Bien que les recherches en psychologie sociale aient analysé la notion de valeurs fondamentales de l'individu depuis plus d'un demi-siècle, le manque d'attention accordé aux valeurs des athlètes est surprenant. En effet, les valeurs individuelles, définies comme des constructions cognitives, peuvent transcender des situations spécifiques, intervenir dans les motivations de base et prédire les futurs comportements des pratiquants sportifs (Albouza, Chazaud & Wach, 2013). Or, pour consolider cette approche innovante encore peu développée en France (Albouza, 2011), il devient nécessaire de disposer d'un outil solide permettant de mesurer les valeurs motivationnelles à la pratique sportive compétitive afin d'améliorer la méthode de l'entraînement.

## Objectif

La présente étude vise à valider un Questionnaire des Valeurs Motivationnelles de l'Athlète (QVMA).

## Méthode

Au total 309 compétiteurs (145 femmes et 164 hommes), âgés de 18 à 23 ans, ont rempli le questionnaire de valeurs de Schwartz PVQ (Portrait Values Questionnaire, Wach & Hammer, 2003) et le QVMA à valider.

## Résultats

Le QVMA est une échelle en 20 items de type Likert en 6 points élaborée par un comité d'experts en psychologie du sport. Le QVMA est constitué de 5 dimensions des valeurs motivationnelles de l'athlète: *Affirmation du statut, Dépassement de soi, Plaisir, Respect des règles, et Morale*. Après avoir vérifié la validité et la clarté des items ( $n = 30$ ), le QVMA a été administré à d'autres athlètes ( $n = 279$ ). L'analyse en composantes principales à l'aide d'une rotation *varimax* révèle cinq facteurs comprenant ces 20 items, et présentant une saturation supérieure à 0.60 sur le facteur correspondant et expliquant 56,10 % de la variance. La consistance interne des ces 5 échelles étaient relativement satisfaisantes ( $\alpha > .67$ ), la stabilité temporelle du QVMA a été vérifiée par le *test-retest* ( $r = .43$  à  $.66$ ,  $p < 0,05$ ) ( $n = 41$ ) et les 5 dimensions des valeurs du QVMA se trouvent cohérentes avec celles du PVQ ( $r = 0.22$  à  $r = 0.51$ ,  $P < .05$ ).

## Conclusions

Nous pouvons admettre que le QVMA est validé à ce niveau de développement en considérant que la stabilité du questionnaire n'aurait pas été modifiée par le nombre des athlètes.

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# Dimensions de personnalité et performance sportive chez les nageurs

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**Keywords**: Natation, personnalité, performance sportive

## **Introduction**

Depuis quelques années, l'étude des prédispositions psychologiques de la performance sportive est l'objet de recherche de nombreux travaux en psychologie du sport. Piedmont (1999), Baudin (2007). En natation, les facteurs psychologiques requis pour la réalisation de performances n'ont pas fait l'objet d'études. La natation, discipline individuel, exige un investissement psychologique très important. Ceci nous amène à nous interroger : quelle sont les dimensions de la personnalité qui contribuent à la réalisation de performances chez les nageurs.

## **Objectives**

Cette étude vise à vérifier si les dimensions du modèle (Big Five) contribuent à réalisation de performances sportives chez les nageurs.

## **Method**

Pour appréhender la personnalité des nageurs, nous avons utilisé l'inventaire NEO-PI-R (Costa & McCrae, 1992) traduit en français (Costa, McCrae & Rolland, 1998). Quant à leur performance, la grille de performance de Baudin (2007), issue essentiellement (91%) lors de sa conception de sports collectifs et composé de 35 critères, a été adaptée à l'activité natation avec 28 critères. A travers cette grille, les entraîneurs évaluent les capacités, la maîtrise, les comportements des nageurs aussi bien en compétition qu'à l'entraînement.

## **Results**

Les résultats montrent qu'il existe un lien entre les dimensions du modèle de personnalité en cinq facteurs et la performance des nageurs. Les nageurs névrotiques sont diminués dans; la coordination globale du corps, l'originalité, la créativité dans la course, le bagage technique de base, la capacité de concentration et les qualités physiques. Les nageurs consciencieux ont un mordant pour l'activité et une volonté de se dépasser, sont compétitifs, rigoureux dans leur comportements, combatifs en compétition et à l'entraînement, persévérant dans la volonté de progresser et obsédés par la réussite.

## **Conclusion**

Ces résultats ont confirmé l'existence du lien entre les dimensions du NEO-PI-R et la performance sportive chez les nageurs. La question qui reste posée : Aurons nous les mêmes résultats si nous prenons chaque spécialité à part.

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# Exploring the interactive effects of autonomy-supportive and controlling coaching behaviors on adolescent athletes' motivation for sport

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**Keywords**: Need satisfaction, self-determined motivation, burnout, coach behavior

## **Introduction**

Theory and research support the conclusion that an autonomy-supportive interpersonal style is an effective motivational technique for coaches, whereas a controlling style is ineffective (Mageau & Vallerand, 2003). However, the behaviors associated with each of these styles have been found to be relatively independent (Bartholomew et al., 2010). A more complete understanding the influence of coaches on athletes' motivation, therefore, requires exploring both the independent and combined effects of these behaviors.

## **Objectives**

The purpose was to test the independent and interactive effects of perceived autonomy-supportive and controlling coaching behaviors on the motivational response of adolescent athletes.

## **Method**

Athletes ( $N=301$ ,  $M$  age = 15.68 years; 63% female;) from the USA completed surveys assessing their perceptions of their coaches' behaviors (Sport Climate Questionnaire, Controlling Coaching Behavior Scale), their need satisfaction (Perceived Competence subscale from Intrinsic Motivation Inventory, Perceived Autonomy Scale, Feelings of Relatedness Scale), motives for sport (Behavioral Regulation in Sport Questionnaire), and level of burnout (Athlete Burnout Questionnaire).

## **Results**

Hierarchical regression analyses showed that the independent effects of autonomy-supportive and controlling behaviors together significantly ( $p<.01$ ) predicted each of the motivational variables ( $R^2$  ranged from .07 – .40). In 5 of the 10 analyses; however, the main effects were superseded by a significant ( $p<.05$ ) interaction ( $\Delta R^2 = .01-.03$ ). An examination of the interaction plots reveal that: (a) positive motivational responses increased as perceptions of autonomy support increased - particularly when the athletes also perceived a relatively lower level of controlling behaviors, and (b) the most positive motivational outcomes were associated with the perceptions of relatively higher autonomy support and relatively lower controlling behaviors.

## **Conclusion**

Autonomy-supportive and controlling coaching behaviors are each related to athletes' motivational responses, and in some cases the interaction of these behaviors adds to our understanding.

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## **Working with injured athletes: two case studies and analysis of psychological interventions**

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**Keywords**: Sports injury, coping, psychological intervention

### ***Introduction***

Professional sport is sometimes called “a breeding ground” for injuries, which reinforced by risk culture according to a maxim “faster, higher, stronger” can have serious consequences. One of the stereotypes inherent in sport is athletes’ belief that “no pain brings no gain”. Response to sport injury depends greatly on its severity and athlete’s perception of it. Athletes’ reaction and sustaining bodily harm are complex in nature (Blecharz & Siekanska, 2005) and involve various aspects - emotional, cognitive and behavioural. Response has its dynamics and conditions and it entails the process of coping strategies based on own resources as well as external support. An athlete’s response to injury is not always proportional to its severity.

### ***Objective***

The main objective of this study is to recognize psychological mechanisms of coping after sports injury.

### ***Method***

Cases study: (1) the first athlete, a soccer player, who after a serious injury and a long-lasting rehabilitation returned to sport at a higher than a pre-injury level; (2) the second athlete, a speedway rider, catastrophically injured during the competition, by adaptation to a new situation re-gained a complete life-satisfaction.

### ***Results***

Perception of injury has implications in rehabilitation process and functioning of an athlete after return to sport. Some injuries, however, are catastrophic in their outcomes, and pose a great challenge to an athlete, medical team or supporting close ones. Two case studies provided examples of athletes coping with sustained injuries. The research indicated that reflective-optimistic attitude enhances adherence to a new, difficult situation, and its perception as a challenge. The most effective strategies are: (1) treating rehabilitation sessions as trainings and aiming at improving condition and agility; (2) setting realistic and adherence-oriented goals; (3) showing discipline towards therapeutic sessions (resembling a champion motivation to train).

### ***Conclusion***

The study confirmed that response to injury and situation appraisal changed over the time and this fact should be taken into consideration. Athlete’s attitude along with his history of injuries and possessed skills will determine whether the desirable changes take place. The findings of the two case studies allowed obtain an in-depth picture of psychological mechanisms pertaining to a sport injury, and confirmed the usefulness of psychological tools (Scale of Perception of Injury in Sport, Semantic Differential, Scale of Emotion Dynamics, Blecharz 2008; Blecharz & Siekanska, 2005) to manage an injured athlete.

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# Développement d'une échelle générique multidimensionnelle d'habitude en langue française

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**Keywords**: Validation, automaticité, comportements de santé

## Introduction

Une habitude est un comportement automatique (i.e., *déclenchement* non intentionnel, adoption difficilement *contrôlable*, réalisation *efficace*). Les travaux relatifs à ce concept ont connu un essor important, grâce au développement du Self Report Habit Index (Verplanken & Orbell, 2003). Le SRHI a reçu l'attention de nombreux chercheurs, mais soulève plusieurs problèmes : (1) des items font référence à l'historique de répétition du comportement ou à sa place dans l'identité, plutôt qu'à l'automaticité (Gardner et al. (2011) ont dû exclure la moitié des études recensées dans leur méta-analyse, car ces énoncés avaient été éludés) ; (2) conceptuellement l'automaticité comporte plusieurs facettes, or le SRHI est unidimensionnel. Pourtant, certains aspects de l'automaticité seraient cruciaux pour une adoption régulière du comportement. **L'objectif** de ce travail est de valider en français une échelle d'habitude multidimensionnelle générique (i.e., applicable à divers comportements de santé, dont l'activité physique).

## Etude préliminaire : Construction de l'outil

Une traduction inversée des 12 énoncés du SRHI de l'anglais au français a été effectuée avec deux personnes bilingues. Un comité d'experts s'est prononcé sur la validité de contenu ; 3 items ne correspondant pas à l'aspect automatique du comportement ont été exclus ; certains énoncés pouvant renvoyer au déclenchement ou à la réalisation d'un comportement, ils ont été reformulés.

## Etude 1 : validation pour l'activité physique

Le questionnaire a été rempli par 293 étudiants ( $M = 20,9$  ans) concernant l'activité physique, à l'aide d'une échelle d'accord en 5 points. Une Analyse Factorielle Confirmatoire a révélé un ajustement adéquat du modèle aux données [ $\chi^2/df = 2.04$  ;  $TLI = .96$  ;  $CFI = .98$  ;  $RMSEA = .06$ ]. La consistance interne était satisfaisante ( $\alpha_{\text{décl}} = .83$  ;  $\alpha_{\text{ctrl}} = .81$  ;  $\alpha_{\text{eff}} = .73$ ). Les scores des étudiants en STAPS étaient significativement plus élevés pour les 3 dimensions ( $4.05 < t < 9.24$  ;  $p < .001$ ), par rapport à ceux issus d'autres filières.

## Etude 2 : validation pour les transports quotidiens

Le questionnaire a été rempli par 76 adhérents à la MGEN ( $M = 47,5$  ans) concernant le trajet qu'ils effectuent de façon régulière entre leur domicile et leur lieu de travail. La consistance interne était acceptable pour deux sous-échelles ( $\alpha_{\text{décl}} = .72$  ;  $\alpha_{\text{eff}} = .88$ ) et limite pour la troisième ( $\alpha_{\text{ctrl}} = .59$ ). Les scores obtenus pour une modalité de transport utilisée peu fréquemment étaient significativement plus faibles que ceux obtenus pour la modalité la plus fréquemment utilisée ( $-7.54 < t < 13.9$  ;  $p < .001$ ).

## Conclusion

L'EGMH-9 est une échelle auto-rapportée reflétant les différentes dimensions de l'automaticité d'un comportement. Trois études ont permis de mettre en évidence sa validité interne et externe pour différents contextes.

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# Influence of friendship quality on relatedness across countries

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**Keywords**: Adolescence, relatedness, cross-cultural research, friendship quality

## Introduction

Previous researches have shown that fulfillment of relatedness is an important determinant of adolescents' physical activity (PA; Aibar, 2013; Laversen, Danielsen, Birkeland & Samdal, 2012). Considering that PA levels significantly varied between Spain and France (Aibar, 2013), it may be possible that relatedness may modify the effect that contextual situation (i.e. country) has on PA. In turn, determinants of relatedness may be also influenced by country.

## Objectives

The main goals of this research were twofold, a) to explore the determinants of relatedness, especially those linked to friendship quality, and b) to analyze whether country influences on those effects.

## Method

The sample consisted of 759 French and Spanish adolescents (51.65% Spanish,  $M$  age = 14.31,  $SD$  = 0.72). The Sport Friendship Quality Scale (SFQS) was used to measure friendship quality in sport and physical activity. Six friendship dimensions were included: self-esteem enhancement and supportiveness ( $\alpha$  = .855), loyalty and intimacy ( $\alpha$  = .648), things in common ( $\alpha$  = .775), companionship and pleasant play ( $\alpha$  = .838), conflict resolution ( $\alpha$  = .762) and conflict ( $\alpha$  = .807). A general linear model (GLM) was done to analyse relatedness differences across countries. A forward stepwise regression was conducted to identify influence factors. Country, gender, age, friendship quality variables, and all interaction effects (friendship quality variables x country) were included in the analysis. SPSS v.15.0 was used to conduct all analysis.

## Results

The GLM revealed a significant effect of country ( $F(1, 758) = 21.27, p < .001; \eta^2 = .027$ ) on relatedness, showing that Spanish adolescents had higher values than their French counterparts. The regression on relatedness showed a significant effect of gender ( $B = .534; p < .001$ ), self-esteem enhancement and supportiveness ( $B = .430; p < .001$ ), companionship and pleasant play ( $B = .298; p < .001$ ), and conflict resolution ( $B = .141; p = .018$ ). No significant interaction effects were found. The model explained .237 of the variance of relatedness.

## Conclusion

Gender and three friendship quality variables constituted significant determinants of relatedness but their effects did not varied as a function country. The influence of best friends in the sport and physical activity domain should be considered on adolescents' PA promotion programs (Jago et al., 2011).

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# Burnout and clinical empathy among medical residents: the influence of physical activity

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**Keywords:** Resident, physical activity, burnout, empathy

## Introduction

The three years of medical residency are very stressful for several reasons: lack of time, work overload, first medical responsibilities, contact with patients, pressures from university... Medical residents have just a short time free for practicing physical activity. Actually, we know that burnout tend to increase during medical scholarships and that clinical empathy (with patients) tend to decrease during residency. While there is some evidence showing that physical activity is related to stress or health, there are still few data confirming the effects of physical activity on clinical empathy.

## Objectives

The objectives of this study are to examine: 1) the covariation of physical activity, burnout and empathy during the first year of residency, 2) the effects of physical practice on the burnout and empathy of residents.

## Method

281 Parisian residents in general Practice between 23 and 28 years old were included in the present research. At two times (April 2013 and April 2014), they responded to specific questionnaires focusing on the assessment of both burnout (MBI) and clinical empathy (JSPE). They were also questioned about their frequency of physical activity (number of hours of practice per week).

## Results

The evolution of frequency of physical activity, burnout and clinical empathy will be examined through analysis of variance of repeated measures. Effect of physical activity on burnout and empathy will be examined through multiple linear regressions.

## Conclusion

Physical activity seems to decrease when burnout increases and empathy decreases. Our study suggests that preventive actions could be carried out in order to prevent burnout and difficulties in patient's care among residents.

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## **‘Promoting activity in elderly’ project**

### **Promotion de l’activité physique chez les seniors – projet P.A.P.S**

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**Keywords:** Aging, sedentary lifestyle, physical activity, engagement, behavior change

#### ***Introduction***

In France, with over thirteen million people, older adults now represent 21.5% of our population (INSEE). It is forecasted that by 2060, the population of people over 60 years old is expected to increase by nearly 80% with strong growth until 2035. Such projections warrant special attention for guarding this section of the population against issues associated with health and well-being. Considered as a public health priority (World Health Organization, 2004), Western countries are developing strategies against physical inactivity by encouraging the elderly community to engage in regular physical activity.

Research has investigated a range of variables associated with older people’s engagement in physical activity and primarily they have been underpinned by theoretical frameworks of human motivation. These studies have tended to focus on what favorable factors relate to levels of commitment in physical activities without exploring obstacles that could prevent a person to practice. It seems well founded that motivation is inextricably linked to emotional experiences and indeed, many studies have shown a positive relationship between the experience of pleasant emotional states and the adherence of persons with physical activity. However, no study has dealt with the hypothesis that an elderly individual can be concomitantly motivated to practice, yet, experience unpleasant emotions that block their engagement in starting or maintaining physical activity. Accordingly, we hypothesize that despite incentives to engage in physical activity (e.g., for well-being or health), an older adult may avoid or abandon the practice because of affective obstacles, such as social anxiety and fear of injury. Thus, we could also hypothesize that the better healthcare professionals are able to regulate the emotions of elderly the higher will be their engagement in physical activity.

#### ***Objectives***

The P.A.P.S project aims to better understand the experience of the elderly in order to be better able to achieve behavioral change towards physical activity, and thus, provide some ways to fight against the phenomenon of physical inactivity in older adults. Currently in its initial stages, the first part of the project will evaluate the consistency of our hypothesis. This will provide the starting point of an intervention project that for developing evidence based training programs for allied healthcare professionals working with the elderly public in the effective use of emotion regulation for the promotion of engagement in physical practice.

#### ***Method***

For this first step, 20 sedentary and healthy participants (between 65 and 75 years old) will be interviewed about affective states that are provoked by the idea to practice physical activity.

#### ***Result***

The P.A.P.S project will start on September 2014. This poster provides the opportunity to discuss about its interests and its expectations.



# Implicit attitudes toward physical activity and healthy eating

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**Keywords**: Implicit attitudes, physical activity, healthy eating, implicit association test, implicit processes

## Introduction

Physical activity (PA) and healthy eating (HE) are widely recognized as a key component of individuals health. However, in spite of those well known benefits and repeated efforts to communicate them, a large proportion of population fail to adopt recommended PA and HE (Martin et al., 2000). On one hand, psychosocial theories proposed that health behavior are controlled by conscious and reflective factors such as explicit attitudes, perceived behavioral control, social norms or intention (Theory of Planned Behavior, Ajzen, 1991). On the other hand, recent studies propose that health actions are guided not only by controlled processes but also by automatic or implicit processes (Sheeran, Gollwitzer & Bargh, 2013). Among these automatic processes, this study will focus specifically on implicit attitudes relative to PA and HE.

## Objectives

The main objective is to explore the specific role played by affective and instrumental implicit attitudes toward PA and HE, in the predictive pattern of prediction of those behaviors.

## Hypothesis

We expect that implicit attitudes will predict PA and HE controlling for the contribution of the TPB variables and that they have a moderating role in the relation between intention and behaviors.

## Method

Two Implicit Association Tests (IAT; Greenwald, McGhee & Schwartz, 1998), one relative to PA and another to HE were performed (E.Prime software) and a questionnaire was used to assess the TPB variables, PA (GPAQ) and HE (NAQA PNNS). Participants were recruited in the general population (n=100).

**Results**: ongoing study.

## Conclusion

Automatic processes represent a relevant path to understand the initiation and maintenance of health behaviors. Identifying precisely the impact of implicit variables such as implicit attitudes toward PA and HE could enhance the effectiveness of behavior change programs.

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# **Influence of a psychophysiological coherence training workshop on physiological and psychological variables**

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**Keywords**: Biofeedback, psychophysiological coherence, sense of coherence, health, spirituality

## ***Introduction***

This research was motivated by various related studies indicating the effectiveness of psychophysiological coherence training involving heart rate variability (HRV), especially through heart rhythm coherence feedback (Edwards, 2013). In the present study it was hypothesized that a physiological coherence training workshop, in which participants cultivated a positive emotion with heart focused breathing at about 6 breaths per minute, would be associated with increased physiological coherence as well as improved psychological perceptions after training and as compared to a matched control group who had not received training.

## ***Objectives***

The objectives of this study was to evaluate the influence of a psychophysiological coherence training workshop on standardized physiological and psychological measures, as well as participants' qualitative experiences.

## ***Method***

Integral psychological, mixed, quantitative and qualitative methods in a pre- and post-test, quasi experimental and matched control group, outcome evaluative design was employed. Following appropriate ethical procedures, a sample of 10 professional psychology students volunteered to participate in the three hour workshop. The independent variable consisted of psycho-physiological coherence training which included an emWave2 apparatus. Dependent variables included emWave2 measures of workshop participants' physiological coherence as well as psychometric measures of their sense of coherence, health and spirituality perceptions, in addition to written descriptions of their experiences and evaluation of the workshop.

## ***Results***

Research hypotheses were supported. Qualitative experiential and evaluative descriptions meaningfully endorsed the quantitative physiological and psychological findings with regard to the perceived value and effectiveness of the workshop on participants' breathing, physiological coherence, sense of coherence, health and spirituality perceptions. Integrative findings support various truth claims towards the workshop being reliable, valid, dependable and transferable.

## ***Conclusion***

Findings support and extend previous research (Edwards, 2013). Similar international and local workshops and related programmes are recommended to promote health, education and sport.

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# Determination of validity and reliability of competitive anger and aggressiveness scale in Iranian athletes

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**Keywords:** Anger, aggressiveness, moral content judgment, validity, reliability, factor analysis

## Introduction

The Competitive Aggressiveness and Anger Scale (CAAS; Maxwell & Moores, 2007) is an efficient method of assessment developed to identify athletes that may be more likely to display acts of aggression. As the field of sport and exercise psychology becomes increasingly cognizant of the impact of multiculturalism, researchers should begin making strides to validate widely used instrument of important psychological and behavioral constructs, such as anger and aggressiveness, cross-culturally.

## Objective

Determining the validity and reliability of competitive anger and aggressiveness scale in Iranian athletes.

## Methods

This research has been done at three phases. For this purpose in the first phase, for exploratory analysis 198 athletes from different sports by means of cluster random sampling were selected (age:  $M = 22.70$ ,  $SD = 5.61$ ) and completed translated version of competitive anger and aggressiveness (Maxwell and Moores, 2007) and moral content judgment in sport scales (MCJSQ). MCJSQ was 25 items related to five constructs included: normative order, egoistic utilitarianism, social utilitarianism, harmony-serving consequences & fairness. In the second phase, the CAAS was completed by a new sample of 150 athletes (age:  $M = 21.83$ ,  $SD = 6.59$ ) for confirmatory analysis (CFA) was performed using AMOS 18.0 software. In the third phase in order to test-retest reliability, other 60 athletes completed this scale.

## Results

Data showed translated version of competitive anger and aggressiveness scale in Iranian athletes has acceptable construct validity of exploratory factor analysis so that obtained two factors (aggressiveness & anger) predicted 43.32 percent of variance. For any factor, six items congruent of original scale were obtained. Cronbach's alphas for the whole scale and subscales were equal to 0.78, 0.74 and 0.68 respectively. Relationship between translated scale and moral content judgment in sport scale showed that the competitive anger and aggressiveness in sport has good convergent construct validity ( $r = -0.219$ ,  $P = 0.005$ ). In the second stage in order to determination of confirmatory factor analysis, other 150 athletes completed this scale. Data showed all values indicated a good fit model with  $GFI = .92$ ,  $CFI = .91$ , Relative  $\chi^2/df = 1.45$  &  $RMSEA = .052$  that was showed in this questionnaire two factors and six items for each factor were obtained. Intra-class-correlations showed this scale has acceptable temporal reliability (anger: 0.90, aggressiveness: 0.84 and whole of scale: 0.91).

## Conclusion

Also data showed that translated scale of anger and aggressiveness has acceptable validity and reliability in Iranian athletes and has the usability by athletes, trainers, and researchers.

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# **Influence of the type of ball on knee injuries in women's football: a contribution from analyses video**

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**Keywords**: Women's football, knee injury, observation and analysis video, prevention

## **Introduction**

Football is the most popular sport in the world. With over 265 million players, 26 million are women. However there are a few studies on injuries suffered by soccer players (Junge & Dvorak, 2004) and most of the available knowledge is based on studies of male players. Nevertheless, like many sports involving cutting, landing or pivoting, football has risk factors for knee (ACL) injury with a disproportionately high ratio for women (Podromos *et al.*, 2007). The anatomical and hormonal specificities (Biscevic *et al.*, 2005; Jacobson, 2006) partially explain the fragility of the ACL in female soccer players (Griffin *et al.*, 2006). Among the exogenous variables that are rarely studied, the adaptation of the ball to female characteristics remains poorly documented.

## **Objectives**

The present study seeks to explore optimal compatibility of ball characteristics (size 5, 4 and futsal) with the specificity of female players (movements and morphology) in a perspective of preventing knee (ACL) injuries.

## **Method**

Nine female soccer players (ages 16-18), with the same technical level (unraveled level), used different types of ball (size 5, 4 and futsal) for a whole season. Two types of data were collected. The video and some relevant indicators were selected in order to analyze the use of each type of ball for dribbling and kicking. The aim was to understand the physical adjustment of the female player with the ball, as well as her performance and adjustment to the three balls. Risk positions of the knee were identified.

## **Results**

The results of this study show significant differences ( $p < 0.05$ ) between the trajectories produced by each type of ball. They confirm that the ball size 4 offers the best speed-precision relationship during dribbling the ball. It puts players in optimal conditions of technical success and seems to limit the risks to the knee joint. The ball size 5 currently used for women's soccer has been identified as having the highest risk for knee injury.

## **Conclusion**

This study has several limitations but shows the player's physical adjustments to the ball size as well as the risks for ACL injury with a size 5. It reflects the importance of the use of a ball adapted to the morphological and physiological characteristics of women. It does not currently appear that the soccer institutions have considered these questions. It could be interesting to continue research in this direction and explore psychological consequences of an adapted ball size for women.

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# Emotional responses during a 3 min self-paced running exercise vs semi-controlled exercise in secondary school pupils

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**Keywords**: Pacing strategy, emotion, motivation, pleasure, perceived exertion

## Introduction

Self-paced exercises are often used in Physical Education in order to improve the capacity to control exercise intensity in relation with personal psychophysiological capacities. According to St Clair Gibson et al (2006), pacing strategy is acquired during adolescence and is a stable process.

## Objectives

The aim was to compare the evolution of running speed and the emotional responses during a 3 min self-paced run vs a 3 min in which a minimal rating of perceived exertion (RPE) is imposed in order to test whether pacing strategy and emotional strategy are influencable or constant parameters.

## Methods

A test group (TEST: 56 pupils) and a RPE group (71 pupils) realized 2 maximal 3 min runs. The test group freely self-paced the first and second races. During the second race, the group RPE was asked to run at a level of perceived exertion at least equal to the average level of the first race. The effort, the pleasure, the desire to continue, the desire to stop and the level of resources are measured every 100m with a Likert scale from 0 to 10.

## Results:

Pacing strategy corresponded to a fast start, a decrease until the last quarter and a final acceleration in the two races for the two groups. The effort and the desire to stop increase while the pleasure, the desire to continue, and the resources decrease in linear way at each race and for each group ( $p < 0.05$ ).

	Average distance.	Average effort	Average pleasure
First race group TEST	737.1 $\pm$ 97.2	3.47 $\pm$ 2.34	7.09 $\pm$ 3.1
Second race group TEST	745.9 $\pm$ 115.1	2.75 $\pm$ 8.04 *	8.04 $\pm$ 2.61 *
First race group RPE	702.1 $\pm$ 91.9	4.58 $\pm$ 2.64	5.09 $\pm$ 3.31
Second race group RPE	796.8 $\pm$ 106.1*	6.38 $\pm$ 2.01 *	5.23 $\pm$ 3.19

\*: Significant difference with test 1 ( $p < 0.05$ ).

## Conclusion

The most surprising is that emotional responses seem to correspond to a constant pattern whatever the running conditions. Indeed, emotional parameters always evolved in the same manner at each race and for each group. This could be one part of the process inducing that pacing strategy is stable as always shown (St Clair Gibson et al, 2006).

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# Emotional responses during a 3min self-paced run in secondary school pupils

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## Introduction

During exercise performed at severe intensity, what prevents the occurrence of catastrophic fatigue is the interaction of a protective mechanism that precedes the failure in physiological systems and manifests itself as powerful perception of fatigue and displeasure (Baron et al., 2011).

## Objectives

The aim was to study the emotional responses during an incremental test and a 3-min self-paced when maximal performance is asked in secondary school pupils.

## Methods:

71 secondary school pupils (15 and 16 years) performed an incremental test and 3-min self-paced at maximal performance. The effort, the pleasure, the desire to continue (DC), the desire to stop (DA) and the level of resources are measured, at every stage for the incremental test and every 100m for the 3-min, with a Likert scale from 0 to 10.

## Results:

During the incremental test, effort, pleasure, EC, EA and the level of resources are correlated to intensity ( $R^2 = 0,65; -0,18; -0,24; 0,41$  et  $-0,47$ , respectively,  $P < 0.05$ ). During the 3 min test, the most important result is that the pupils have chosen the strategy that consists in an evolution of these parameters in a linear way ( $p < 0,05$ , table 1), with the preservation of an emotional reserve at the end of the test (effort only at  $7.41 \pm 2.14$  at latest measure for instance).

Table 1: Matrix of correlation between race time and evolution of effort, pleasure, DC, de DS, and level of resources.

	EFFORT	PLEASURE	DC	DS	RESOURCES
Duration of exercice	0,49	0,13	0,18	0,2	0,28

## Conclusion :

The more the fatigue was, the more the consented effort increased while the pupils were free to regulate their involvement. There are several reasons for this. Among these, the intensity motivational theory in which effort is proportional to the difficulty (Gendolla and Richter, 2010) could be proposed as an explanative hypothesis.

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# Les motivations de la pratique sportive chez les jeunes adolescents en Algérie

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**Mots clés :** Motivation intrinsèque, motivation extrinsèque, pratique sportive

## ***Introduction***

De nombreux instituts de beauté et de santé dans le monde ont mis à enquêter sur les raisons et les motivations pour la participation à des activités physiques et sportives (Badawy et al. 2010). Notre présente étude vise à répondre à la question suivante : Quelles sont les raisons (motivations) de la pratique sportive chez les jeunes adolescents en Algérie?

## ***Objectifs***

Déterminer les raisons ou la nature des motivations liées à la pratique des activités physiques et sportives chez les jeunes adolescents et adultes en Algérie.

## ***Méthode***

Les participants âgés de (17-45) ans pratiquant de différentes activités physiques et sportives, ont été invité à répondre aux 28 items composant le « ÉMS-28 » (Brière et al, 1995), sur une échelle Likert en 7 points allant de " ne correspond pas du tout(1) à correspond très fortement(7) ".

## ***Résultats***

Les résultats ont montré que les motivations de participation activités physiques sportives sont en priorité d'origine intrinsèque, et pour des raisons de compétition en dernière classe .Ceci est cohérent avec les conclusions de Winberg et al. (2000), Kilpatrick et al. (2007), Bowman et al. (2001) et Kelt et al. (2004). Les résultats ont montré une différence significative dans la motivation pour la participation aux APS entre les hommes et les femmes ( $p < 0,05$ ).

## ***Conclusion***

Le sport est considéré par l'ONU comme un droit social pour l'humanité (ONU, 2003), et cela exige les décideurs politiques d'encourager, développer et promouvoir la pratique sportive aux niveaux des quartiers et des villes afin de répondre aux besoins des individus dans ce domaine sensible de la vie humaine.

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# Validation of the factorial structure of a 6-achievement goal questionnaire in sport and exercise

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**Keywords:** Achievement goals, approach, avoidance, motivation, physical education

## Introduction

Recently, a refinement of Elliot et al.'s achievement goal model (Elliot & McGregor, 2001; Elliot & Murayama, 2008) was proposed by Elliot, Murayama, and Pekrun (2011). These authors validated an achievement goal questionnaire based on a 6-goal framework. By combining different definitions of competence (based on task mastery, self improvement, or others) and the valence of the outcome (appetitive or aversive), this questionnaire measures task-approach (mastering a task), task-avoidance (not failing in a task), self-approach (performing better than previously), self-avoidance (not performing worse than previously), other-approach (outperforming others), and other-avoidance goals in academics (not being outperformed by others).

## Objectives

The aims of this study were to create a 6-achievement goal questionnaire for sport and exercise and to validate the factorial structure of this instrument.

## Method

A preliminary version of 40 items was created based on previous achievement goal questionnaires (Elliot & Murayama, 2008; Elliot et al., 2011; Riou et al., 2012). Items from English-language questionnaires were back-translated. Then, 442 students (212 males; 230 females;  $M_{\text{age}} = 15.6 \pm 1.18$ ) answered this former version of the questionnaire. Confirmatory Factorial Analyses (CFAs) were computed to test and improve the factorial structure of the instrument.

## Results

The CFAs led to retain 18 items (3 per goal) and revealed a satisfactory factorial structure ( $\chi^2 = 302.42$ ;  $p < .001$ ;  $ddl = 123$ ;  $\chi^2/ddl = 2.46$ ;  $CFI = .94$ ;  $NFI = .91$ ;  $RMSEA = .058$ ). The loadings of the items on their respective factors were also satisfactory (from .49 to .85).

## Conclusion

This 18-item 6-goal questionnaire is valid with respect to its factorial structure. The next step of the validation process is the check of the theoretical validity of this instrument, through the examination of its congruence with constructs that are assumed to be related to the different types of goals. As a whole, this research will yield a French 6-achievement goal questionnaire that could be used to compare the relevance of different achievement goal frameworks in sport and exercise settings.

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# L'effet de l'écoute de la musique et de l'heure de la journée sur les performances cognitives chez des tennismans

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**Keywords**: Tennisman, performances cognitives, heure de la journée, écoute de la musique

## **Introduction**

Le tennis est une activité qui requiert un traitement cognitif considérable, préalable à la réponse motrice (Benguigui, 2003). Or, les capacités cognitives humaines ne sont pas efficaces à n'importe quel moment de la journée (Emwein et al., 1998). Il s'affiche que la musique est une source de motivation appréciée dans le domaine sportif (Elliott et al., 2012).

## **Objectifs**

Ainsi, l'objectif de la présente recherche était l'étude des variations diurnes de certaines performances cognitives du tennisman entre autre l'attention, le TR et les fonctions exécutives sollicitées considérablement lors du jeu et de vérifier l'effet bénéfique de l'écoute de la musique sur les mêmes performances.

## **Méthode**

14 sujets ( $17 \pm 0.5$  ans ;  $9.2 \pm 1.3$  ans d'expérience) ont participé au protocole proposé qui consiste à l'exécution de trois tâches cognitives, au moyen du TR-test (Zimmerman et Fimm, 1992), du barrage-test (Zazzo, 1972) et du trail-making-test (Parkington & Leiter, 1949) pour évaluer respectivement le TR, l'attention et les fonctions exécutives et ceci pendant deux moments de la journée (10 :00 h et 17 :00 h) suite à deux conditions entre autre sans écoute de la musique vs avec écoute de la musique.

## **Résultats**

L'analyse de variance (ANOVA) révèle un effet « heure de la journée » significatif ( $F(1,26) = 7,75$  ;  $P < 0,001$ ), ( $F(1,26) = 16,36$  ;  $P < 0,001$ ), ( $F(1,26) = 44,87$  ;  $P < 0,001$ ) et ( $F(1,26) = 8,51$  ;  $P < 0,001$ ), respectivement pour le TR, l'attention, la partie A du trail-test et la partie B du trail-test. L'ANOVA montre également un effet « musique » plutôt significative ( $F(1,26) = 36,25$  ;  $P < 0,001$ ), ( $F(1,26) = 13,36$  ;  $P < 0,001$ ), ( $F(1,26) = 33,09$  ;  $P < 0,001$ ) et ( $F(1,26) = 15,49$  ;  $P < 0,001$ ) relativement aux mêmes performances.

## **Conclusion**

Nos résultats avancent des performances cognitives meilleures en termes d'attention, de vitesse de réaction et de flexibilité mentale chez les tennismans pendant l'après-midi; Or, nos résultats annoncent que l'écoute de la musique agit négativement sur les performances mentales du tennisman puis qu'elle induit leur détérioration.

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# **L'effet du moment de la pratique de l'EPS et de l'heure de la journée sur les performances mentales de l'enfant tunisien**

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**Keywords**: Moment de pratique de l'EPS, heure de la journée, performances cognitives

## **Introduction**

Certaines organisations du temps scolaire s'appuient sur un agencement scolaire dichotomique plaçant les matières intellectuelles le matin et les activités physiques et sportives l'après-midi tel est le cas du modèle anglo-saxon ou germanique (Sjoberg, 1980) alors qu'il serait plus judicieux d'alterner entre les pratiques physiques et sportives et tâches cognitives (Emwein et al., 1998).

## **Objectifs**

Ainsi, l'objectif de la présente recherche était l'analyse de l'effet du moment de la pratique de l'EPS et de l'heure de la journée sur certaines performances mentales de l'enfant tunisien entre autre, l'attention sélective, le raisonnement et la mémorisation dans le but de parfaire l'agencement scolaire.

## **Method**

84 écoliers (Age :  $10 \pm 0.2$  ans) ont participé au protocole proposé qui se compose de trois tâches cognitives, au moyen du Stroop-test (Stroop, 1935), la matrice de Raven (1960) adaptée pour enfants et du test de la double tâche (Baddeley et al., 1997) pour évaluer respectivement l'attention sélective le raisonnement et la mémorisation et ceci pendant deux périodes en l'occurrence, le matin (entre 10:00 h et 10 :30 h) et l'après-midi(entre 16:30 h et 17 :00 h) suite à deux conditions entre autre EPS avant vs sans pratique d' EPS, pendant quatre jeudi successifs.

## **Results**

L'analyse de variance (ANOVA) révèlent un effet « heure de la journée » significatif ( $F(1,82) = 6,81$  ;  $P < 0,01$ ), ( $F(1,82) = 6,62$  ;  $P < 0,01$ ) et ( $F(1,82) = 14,90$  ;  $P < 0,001$ ) respectivement pour l'attention sélective, le raisonnement et la mémorisation. L'ANOVA montre également un effet « moment de pratique » plutôt significative ( $F(1,82) = 13,49$  ;  $P < 0,001$ ), ( $F(1,82) = 10,56$  ;  $P < 0,001$ ) et ( $F(1,82) = 6,40$  ;  $P < 0,01$ ) relativement aux mêmes performances.

## **Conclusion**

Nos résultats avancent des performances cognitives meilleures pendant l'après-midi ; de plus, il semble que la pratique de l'EPS avant la discipline théorique favorise des performances mentales en hausse.

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# Relationship between student and observer acute and session RPE in a physical education setting

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**Keywords**: Ratings of perceived exertion, physical education, observation

## **Introduction**

Ratings of perceived exertion (RPE) have been shown to be valid with children during physical activity (Robertson et al., 2000). But can physical education (PE) teachers accurately rate the exertion of their students? To answer this question, observers trained in PE estimated the RPE of students using an exertional observation technique.

## **Objectives**

The purpose of this investigation was to examine the relationship between Acute and Session RPE reported by students and RPE estimated by a trained observer during PE class.

## **Method**

PE students in grades six through eight (N=49; Mean age = 12.1±.81 years) performed one cardiovascular (CV) and one muscular endurance (ME) circuit. The CV circuit included slideboard, cycling, and treadmill exercises. The ME circuit consisted of lower body, upper body, and core exercises. Heart rate and RPE for the overall body were recorded immediately following each circuit and again at the end of the exercise bout. RPE were measured using OMNI RPE Child scales and heart rate was measured using Polar heart rate monitors. Observers separately estimated the Acute and Session RPE of students using an exertional observation technique that combined behavioral observation procedures with visual perception (Robertson et al., 2006). Relationships between observer RPE and student RPE were examined using bivariate correlation coefficients, as were relationships between heart rate and both observer and student RPE.

## **Results**

A moderate relationship was found between observer and student Acute RPE ( $r=0.30$ ,  $p=0.04$ ) following the CV circuit. No other significant relationships were found between observer ratings and student ratings, or between observer ratings and student heart rate. Correlations between student Session RPE and heart rate for the CV circuit were  $r=0.33$  ( $p=0.02$ ) and for the ME circuit were  $r=0.38$  ( $p=0.01$ ). Additionally, heart rate was significantly correlated ( $r=0.43$ ,  $p=0.01$ ) with student Acute RPE for the CV circuit.

## **Conclusions**

The results suggest that observers may have difficulty estimating the exertion of students in a physical education setting. Given results from many previous studies indicating a strong relationship between RPE and heart rate, the relatively weak relationship between the two in the present study could indicate that measurement error is occurring when students estimate RPE in a PE setting. As such, it is difficult to draw conclusions regarding the relationship between observer and student ratings.

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# **Blessure, symptomatologie dépressive et environnement sportif: étude de trois entretiens exploratoires auprès de jeunes rugbymen**

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**Mots clefs:** Blessure sportive, environnement sportif, symptomatologie dépressive

## **Introduction**

Au-delà de ses conséquences physiques, la blessure sportive peut être à l'origine d'un certain nombre de répercussions psychologiques. La singularité de ces symptômes, symptômes qui peuvent être aggravés ou minorés en fonction de l'environnement (réactions et attitudes de l'encadrement sportif ou de l'entourage familial (Bilard, 2005), justifie leur détection précoce (Deroche, Stephan, Lecocq, & Le Scanff, 2007). Le vécu psychologique du sportif et son discours à ce propos semblent donc être essentiels en vue de l'approfondissement de ce champ d'étude.

## **Objectifs**

Investiguer les déterminants majeurs du vécu psychologique chez le sportif blessé dans la perspective d'une étude de plus grande ampleur.

## **Méthode**

Trois rugbymen blessés (âges de 19 à 21 ans), évoluant en centre de formation ont participé à un entretien libre exploratoire. La symptomatologie dépressive, les éléments de vulnérabilité psychique existants avant la blessure ainsi que le fonctionnement psychologique du jeune étaient évalués (en termes de présence et d'intensité) à partir de l'analyse du contenu des entretiens, de même que les éléments du discours relatifs aux attitudes de l'environnement familial et sportif.

## **Résultats**

L'analyse des entretiens montre que, parmi les trois sportifs, celui qui avait une organisation psychique marquée par des éléments de vulnérabilité (problèmes relationnels, antécédents anxieux ou dépressifs) était celui pour lequel les troubles dépressifs associés à la blessure étaient les plus intenses. Pour deux d'entre eux la présence d'une pression émanant de l'encadrement sportif ou de l'entourage familial en vue d'une reprise sportive rapide est un facteur aggravant et augmente les difficultés psychologiques liées à la blessure. Dans le troisième cas l'absence de pression était, elle, un facteur limitant l'intensité des troubles dépressifs ou anxieux.

## **Conclusion**

Le discours des sportifs montre une corrélation entre la pression issue de l'entourage et l'intensité de la symptomatologie dépressive en période de blessure. Cette symptomatologie est renforcée par la présence d'antécédents psychologiques traduisant la vulnérabilité de l'individu. Ces éléments soulignent l'importance d'un accompagnement psychologique en plus du suivi médical afin de réduire les risques de décompensation anxieuse et/ou dépressive.

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# Stratégies de recherche visuelle et expertise décisionnelle en taekwondo

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**Keywords**: Perception, regard, décision, expertise, taekwondo

## **Introduction**

De nombreuses recherches ont montré la supériorité des experts pour prendre des décisions rapides et pertinentes au cours de l'action. Cette expertise serait favorisée par l'expression d'habiletés perceptives et cognitives exceptionnelles. Toutefois, peu d'études ont comparé les différences de stratégies de recherche visuelle pour les athlètes du même niveau d'expertise.

## **Objectifs**

Cette étude répond à un double objectif : 1) déterminer les différences de stratégies de recherche visuelle entre des taekwondoïstes expertes ( $n = 6$ ;  $M_{\text{âge}} = 22.6$  ans;  $ET = 1.6$ ) et sub-expertes ( $n = 12$ ;  $M_{\text{âge}} = 15.7$  ans;  $ET = 1.2$ ) lors d'un test en simulation vidéo impliquant une série de prise de décision en situation de combat et 2) déterminer les différences de stratégies de recherche visuelle entre les bonnes décisions et les mauvaises décisions pour chaque groupe de participantes.

## **Méthode**

Nous avons muni les participantes d'un système d'enregistrement oculaire pendant qu'elles observaient des séquences vidéo présentant deux combattantes en compétition. Pendant la durée du test, les participantes devaient se mettre à la place d'une des combattantes et annoncer à voix haute, l'action qu'elles auraient faite au moment de l'arrêt de la séquence.

## **Résultats**

Les résultats provenant d'une analyse de la variance (ANOVA) montrent que les décisions des expertes sont significativement plus pertinentes ( $M = 68.3\%$ ;  $ET = 11.4$ ) que celles des sub-expertes ( $M = 35.5\%$ ;  $ET = 23.4$ ). Par ailleurs, il apparaît que les combattantes expertes utilisent une stratégie de recherche visuelle plus synthétique que les combattantes sub-expertes impliquant de plus longues fixations visuelles en plus petites quantités vers moins d'informations différentes. En revanche, nous n'avons pas observé de différences de stratégies de recherche visuelle pour les participantes de même niveau d'expertise selon la pertinence de leurs décisions (bonne vs. mauvaise). Enfin, l'analyse du pourcentage de temps de fixations visuelles en direction des différentes zones de l'écran montre que l'ensemble des participantes adoptent une stratégie de recherche impliquant le maintien d'un « pivot visuel » en direction du haut du corps de l'adversaire et des zones proches de l'adversaire servant de point d'ancrage à de brefs « zapping » vers les informations en périphérie.

## **Conclusion**

Nos résultats suggèrent que les combattantes expertes emploient des stratégies de recherche visuelle efficaces pour prendre des décisions pertinentes. De plus, l'existence de « pivot visuel » et particulièrement sur les zones proches de l'adversaire suggère l'importance de la vision périphérique dans le processus décisionnel. En effet, ce point d'ancrage en vision centrale favoriserait la récupération d'indices importants relatifs aux mouvements entre les différentes zones d'informations de l'environnement (i.e., les patterns de mouvements) en vision périphérique afin d'obtenir une compréhension globale de la situation.

# Frailty evaluation in older people. Determination of different phenotypes. Interest of physical activity practice.

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**Keywords**: Elderly, frailty, evaluation, Egsodgam software

## ***Introduction***

Frailty is a highly prevalent state in older people associated with multisystem impairments leading to vulnerability, disability, morbidity and death. Numerous risk factors of frailty such as, physical, psychological, social, nutritional, behavioral... participate, in an independent or associated manner, to the development of the frailty. The concept of comprehensive geriatric assessment is ancient and there is none evaluation without method. The Egsodgam software is a multidirectional evaluation tool assessing the different risk factors to determine different phenotypes of frailty characterizing the elderly population.

## ***Objectives***

To assess the phenotype of frailty in 2 different populations of elderly people by determining frailty risk factors, using the comprehensive geriatric assessment with the Egsodgam software. To study the interaction between these risk factors and physical activity.

## ***Method***

84 volunteers, 60 years or older (median 75 years, IQR 69-81) living in single-family houses in Cannes, members to the grouping of public interest of Cannes Bel Age (CBA) and 89 volunteers (78 years, 67-83) of a community-dwelling older adults of the municipal center of social action (CCAS) of Nice, were enrolled for a comprehensive geriatric assessment led by using a computer tool: the Egsodgam software. This software is based on international scales of evaluation of frailty risk factors: Situational, Cognitive and Sensorial, Emotional Balance (EB), Nutritional, Instrumental Activities of Daily Living (IADL), Incontinence, Quality Of Life (QOL), Motility, Felt Pain (FP), which all together determine a level of Global Frailty (GF). This computer tool also allows to quantify the weekly time of Physical Activity [total physical activity (tot PA), physical activity related to leisure or sport (PALS) and daily living physical activities (DLPA)].

## ***Results***

The frailty risk factors were differently impaired in CBA (Cannes) and CCAS (Nice) populations. For both populations, the score of EB was low (median 14.67 for CBA versus 15). FP was affected too (16.25 for both). Motility, Situational and GF scores were better at CBA (16.92 vs 13.85, 16.52 vs 15.65 and 16.8 vs 16.1 respectively,  $p < 0.01$  for all). Cognition was only altered at CCAS (15.52). People of CBA were less sedentary than those of CCAS: tot PA (6.5 vs 4 hours/week,  $p < 0.05$ ), PALS (2 vs 0  $p < 0.01$ ), DLPA (4 vs 3.5). The study of the interaction between these risk factors and PA showed that among CBA and CCAS populations, people who practiced PALS had better EB, Motility, QOL, IADL and global frailty scores.

## ***Conclusion***

The results showed that the most impaired risk factors were different among the two studied populations. They underlined the expression of different phenotypes of frailty which will have to be taken into account for an intervention by targeting the altered factors, in a preventive approach for a successful ageing. They showed that EB was a prevalent impaired status in the two populations and that there is a positive relationship between the practice of PALS with both EB and Motility.

# MINDobese: compliance to a 4-week computerized mindfulness-based intervention in obese outpatients, a pilot study

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**Keywords**: Mindfulness intervention, obesity, program compliance, motivational regulation, impulsivity

## Introduction

According to a French national study on obesity and overweight (ObEpi-Roche, 2012), the prevalence of obese adults is nearly 15%. The World Health Organization (WHO, 2010) estimates that obesity results from two major activities: diet and exercise. A growing interest is given to mindfulness-based interventions for healthy behaviours such as exercise and dietary actions (e.g., Robert and Danoff-Burg, 2010). Mindfulness is commonly defined as a non-judgemental and moment-to-moment awareness of the present experience (Kabat-Zinn, 1990). Mindfulness, on the one hand as a de-automation element, and on the other as a moderator of motivation to exercise, can lead to the reduction of impulsive eating, and also to an increase of the level of physical activity.

## Objectives

This communication is a presentation of a method of intervention. This pilot study aims to test patients' compliance to a 4-week computerized mindfulness-based intervention method.

## Method

Participants. Twenty obese outpatients (BMI > 35kg/m<sup>2</sup>), aged 20 to 55.

Intervention. Testing intervention consist of a 4-week computerized mindfulness-based program. Mindfulness sessions are audio recordings that the patient will listen to, every day for 4 weeks, 15 minutes per day.

Outcomes. Adhesion to the intervention will be measured using different variables (the number of on-line sessions, the duration of the sessions, the date and time of the questionnaire takings), and will be investigated in three interviews with the patients.

Procedure. The same investigator interviews each patient for inclusion at baseline, one-month follow-up, and three-months follow-up.

## Conclusion

This intervention is a new procedure to give complementary cares to obese individuals in a Parisian hospital. Compliance to the protocol matters to determine whether patients will be able to follow the instructions or not.

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# Motivation and anxiety in professional dancers

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**Keywords**: Motivation, anxiety, dancers

## **Introduction**

When people are intrinsically motivated, activities are performed due to some inner reasons and for the individual's own desire. Furthermore, it has been stated that autonomous motivation should lead to more positive outcomes, and less autonomous motivation (especially amotivation) should lead to more negative outcomes (Gillet et al., 2012). Therefore, discovering the relationship between motivation, anxiety and length of experience could help sports coaches and sports scientists. Also, determining information about anxiety and motivation of athletes could suggest what could be done in order to enhance athletes' performance.

## **Objectives**

The aim of this research was to examine the relationship between motivation, pre-performance anxiety and length of experience in professional dancers. It was also aimed to examine whether there is a difference between males and females. Dancing is a popular activity therefore the research sample was chosen among dancers.

## **Method**

The participants were forty eight professional dancers (mean age=25,83±5,20 and mean length of dancing experience=7,46±4,36) who comprise the most famous dance group in Turkey. Anxiety was measured by the Competitive State Anxiety Inventory-2 (CSAI-2) developed by Martens et al., (1990) and adapted into Turkish by Koruç (1998). Motivation was measured by the Sport Motivation Scale (SMS) (Pelletier et al., 1995) which was adapted into Turkish by Kazak (2004). Experience was measured as the length of practicing dancing.

## **Results**

Results showed that there was a significant difference between males and females in somatic anxiety and self-confidence ( $p<.05$ ). Female professional dancers had significantly higher somatic anxiety and lower self-confidence compared to males. Correlation analysis showed that the length of sports experience was significantly correlated with the somatic anxiety ( $r=-.299$ ) and self-confidence ( $r=.407$ ) subscales of CSAI-2. No relationship was observed between motivation and anxiety.

## **Conclusion**

Gender and the length of experience could be the determinants of anxiety. It also appeared that although autonomous motivation is more beneficial, it is not related to anxiety in professional dancers.

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# Dual career pathways and the level of elite athletes' self-actualization

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**Keywords**: Elite athlete, dual career, athlete's development, self-actualization

## **Introduction**

Research concerning dual careers of professional athletes shows that relationships between educational development and sports career are determined by many factors (Stambulova & Ryba, 2013; Siekanska, 2013). However, analysis of the results calls for further explorations of psychological mechanisms able to explain optimal development of athletes' dual careers.

## **Objectives**

The purpose of the presentation is: (1) to determine the level of elite athletes' self-actualization and (2) to investigate the relationships between elements of self-actualization and the type of dual career pathways.

## **Method**

Data was collected using The Self-Actualization Scale AS-5 and a semi-structured interview.

Athletes who participated in the study ( $n=95$ ; 50 males, 45 females;  $m=26,76$ ) were divided into three groups:

- 1) Balanced and harmonious development – no conflict between sport and education perceived ( $n=40$ ), i.e. they perceive both educational and sport development as equally important (100%); they don't perceive schooling as sports career inhibitor (90%);
- 2) Unbalanced development – conflict between sport and education perceived
  - a) Orientation towards sport development (at the cost of educational development) ( $N=34$ ), i.e. they choose sport and perceive sports career as more important than educational development (100%); they pointed schooling out as one of sports career inhibitor (76,5%).
  - b) Orientation towards educational development (at the cost of sport development) ( $N=21$ ), i.e. they perceive education as more important than sport (100%); they don't perceive schooling as one of sports career inhibitor (66,7%).

## **Results**

The ANOVA analysis and  $\chi^2$  test revealed two significant differences between groups of dual career pathways as regards self-actualization: in Self-Acceptance SA ( $F=7,366$   $p=.001$ ) and in Need of Dwelling ND ( $F=4,737$   $p=.011$ ).

## **Conclusion**

The results can help in better understanding of the factors that are important in athletes' optimal development and can also help to recognize the criteria of self-actualization favorable to effective coping and combining athlete's educational and sports career.

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## Returning to sport after injury - psychological aspects

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**Keywords:** Returning to sport, sports injury, psychological intervention

### **Introduction**

Physical injury is one of the most traumatic experiences in athlete's career. There are external and internal factors contributing to it. Athlete's response to physical injury does not always correspond to its severity. Nevertheless, it may affect the way an athlete will cope with this new situation and may also influence possible consequences i.e. return to sport at higher, similar or lower than pre-injury level.

### **Objective**

The main objective of the study is to present psychological aspects of returning to sport after injury.

### **Method**

Practical conclusions will be formulated on the base of the retrospective interviews with 104 professional athletes (54 football and 50 basketball players) and three decades of practice in sport psychology consulting.

### **Results**

Results expected show that emotional responses and beliefs of injured athletes change from the onset of injury to return to sport (Blecharz, 2008; Blecharz, Siekanska, 2012). Return to sport is a dynamic process which comprises five stages: initial return, recovery confirmation, return to physical and technical abilities, high intensity training, and return to competition. Three kinds of stressors are related to return to sport:

- Fear of reinjury, effort to get fit again, correction of techniques affected by injury,
- Social isolation from teammates / training partners; pressure to return to sport quickly, negative appraisal of own skills when confronted with former opponents,
- Decrease in physical form when compared to pre-injury level regaining physical conditioning and place in team.

### **Conclusions**

There are effective psychological interventions and different types of support, i.e.: emotional, tangible (e.g. personal training, offering transportation to and from rehabilitation sessions, rearranging family schedules to accommodate the rehabilitation), informational, motivational, that can be applied while working with athletes returning to sport after injury.

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# The role of physical exercise, burnout, coping strategies and risk perception in explaining injuries in French firefighters

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**Keywords**: Physical activity, firefighters, burnout, coping strategies, injury

## Introduction

Firefighting is reportedly a physically, mentally and emotional demanding job inducing significant musculoskeletal constraints, cardiovascular risk, fatigue and sleep disorders (Bos et al., 2004). Previous studies have identified that sprains were the leading professional injury among this population and mainly occurred at the lower limbs' joints such as the ankle and the knee (Bos et al. 2004; Reichard & Jackson 2010). However, the psychological predictors of firefighters' injuries are poorly investigated.

## Objectives

To characterize French firefighters' injuries and examine the relationships between physical exercise, perception of injury risk, burnout, and coping strategies in explaining injuries.

## Method

**Participants.** A total of 220 male firefighters aged 20 to 62 years ( $M = 36.23$ ;  $SD = 6.94$ ) participated in this study on a voluntary basis and filled in the survey. They completed a series of questionnaires analyzing retrospective data.

**Measures.** (a) Injuries (nature and location); (b) participation in physical exercise (hours per week); (c) coping strategies (WCC); (d) burnout professional (SMBM); (e) perceived severity; and (f) perceived susceptibility.

## Results

An average, participants reported four injuries. More specifically, the majority of the participants revealed that their main injury type was sprain (98% of the cases), particularly on the ankle joint (77%). A multiple regression analysis revealed significant relationships between the total numbers of injuries and the hours of activity physical per week ( $\beta = .07$ ,  $p < .01$ ), seeking social support ( $\beta = .12$ ,  $p < .01$ ), problem-focused coping ( $\beta = -.10$ ,  $p < .05$ ), cognitive weariness ( $\beta = .12$ ,  $p < .01$ ), emotional exhaustion ( $\beta = -.11$ ,  $p < .01$ ), and perceived severity ( $\beta = .10$ ,  $p < .05$ ). These variables explained 27% of the variance of injuries.

## Conclusion

This study demonstrated that ankle sprain was the major injury in French firefighters. Moreover, our results suggest that physical exercise, cognitive weariness at work and perceived severity of injury may be risks factors of injuries whereas coping focused-problem may be protective factors. The paradoxical role of seeking social support and emotional exhaustion at work in explaining injuries needs further investigation.

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# **Influence of valenced polarities on numerical cognition: effect of motion across spatial dimensions**

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**Keywords**: Valence, spatial perception, numerical cognition, motion

## **Introduction**

With embodied cognition theory, studies have shown an association between affect and vertical or horizontal spatial positions. When objects are UP and Right or DOWN and Left in the visual space they are considered respectively as good or bad objects (Meier & Robinson, 2004; Casasanto, 2009). These spatial dimensions are associated to different valenced polarities. Recent other studies showed combined effect of these polarities. Two similar polarities activated simultaneously facilitate cognitive processing, following a polarity correspondence model (Proctor & Cho, 2006).

## **Objectives**

The aim of these studies was to investigate the effect of motion across two combined spatial dimensions on numerical cognition, instead of behavioral performance. When polarity correspondence occurs in spatial and temporal contiguity, activating combined valenced polarities, a facilitative effect is observed on a combined corresponding numerical cognition, such as multiplication (no effect is expected for addition).

## **Method**

Only right-handers have participated in these experiments. The experimental task was to compute operations (multiplication and addition of two numbers) in order to give a valid response quickly. Each operation is presented with motion in one of the four spaces within subjects: Up-Right (positive-positive), Up-Left (positive-negative), Down-Right (negative-positive), Down-Left (negative-negative).

## **Results**

Performance in the combined Upper-Right and Lower-Left space are better than in the Upper-Left and Lower-Right space for the corresponding operation such as multiplications, whereas no effect was found for additions. Numerical performance increased when motion across spatial locations activated similar polarities (such as +/+ and -/- polars), compared to different polarities (+/- and -/+ polars).

## **Conclusion**

It is the first study which indicates that a polarity correspondence about emotion occurs with mathematical rules, instead of a final performance.

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# Influence of motivational polarities on cognitive performance: effect of a motor cues

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**Keywords**: Approach-avoidance, emotion, motor processes, numerical cognition, motion

## Introduction

Within the framework of embodied cognition theories, we investigate the links between motivation, sensorimotor experiences and cognitive performances. Cretenet and Dru (2004) have shown that when a similar motivational system (either approach or avoidance) was activated through congruent unilateral arm actions (laterality and flexion/extension as polarities, Proctor & Cho, 2006), these cues were combined in a multiplicative way, to enhance evaluation or cognitive performance.

## Objectives

We test the effect of motor activation of these motivational polarities on numerical performance. We propose that a motor combination of motivational cues might influence multiplicative rules, within right-handers. When the subject is in a motor congruent condition (right arm flexion or left extension, such as approach/approach or avoidance/avoidance polarities), a facilitative effect is expected on the corresponding numerical cognition, such as multiplication. At the opposite, no effect is expected for a numerical cognition such as an addition.

## Method

We realized an experiment with 77 right-handed students. They had to answer quickly multiplicative and additive operations when they simultaneously perform a congruent (Right-Flexion / Left-Extension) or incongruent (Right-Extension / Left-Flexion) motor action. The experimental conditions were manipulated between-subjects.

## Results

The results show that subjects, who performed in a motor congruent condition, had better results with multiplication than the subjects who performed an incongruent movement. On other hand, no effect was found for the addition.

## Conclusion

This study showed that motor activation of motivational polarities influence numerical cognition, instead of behavioral or cognitive performance.

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# Perceived benefits and barriers to physical activity in different age group of females and males

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**Keywords:** Physical activity, benefits, barriers, sex, age

## Introduction

Past research indicates that early and regular involvement in physical activity (PA) as a youth is positively associated with regular involvement in PA as an adult (Barnekow-Bergkvist et al. 1996). Health educators have, therefore, introduced a wide array of PA programs to various age groups.

## Objective

Because past research shows differences of PA factors across the life span (Ansari and Lovell 2009), we hypothesized that there are differences in perceived barriers and benefits of PA among age and sex groups.

## Methods

The study included 240 participants (73 adolescents  $M_{age} = 18.62 \pm 1.1$  years, 78 youth  $M_{age} = 30.40 \pm 4.9$ , 89 adults  $M_{age} = 50.10 \pm 6.7$ ), with 52.5% female and 47.5% male from three cities of East Azerbaijan province of Iran. They completed the Exercise Benefits/Barriers Scale (EBBS; Sechrist et al., 1987) and a demographic questionnaire. Each respondent was asked to rate the EBBS on a 4-point Likert Scale; 29 items represented PA benefits and 14 items represented barriers to PA.

## Results

The results indicated significant differences in EBBS subscales among 3 groups ( $F_{(18,458)} = 54.293$ ,  $p < 0.005$ ).

Table 1. Comparison of EBBS subscales and Bonferroni post hoc test in age groups

Dependent variables (F, P)	Group (i)	Group (j)	(i-j)	SD	p
Life enhancement (F= 9.34, P= 0.005)	1	2	-1.876	0.628	0.009**
	1	3	-2.581	0.609	0.0005**
Time expenditure (F= 5.04, P= 0.005)	1	2	0.881	0.293	0.009**
	1	3	0.701	0.284	0.043*

$p \leq 0.05^*$ ,  $p \leq 0.01^{**}$  (1= adolescent, 2= youth, 3= adult)

Also, in the youth group, there was a significant effect of sex ( $F_{(9, 68)} = 2.63$ , Wilks' lambda= 0.742 and  $P = 0.011$ ); males scored higher than females on the physical performance subscale ( $F_{(1, 76)} = 8.36$ ,  $p = 0.005$ ).

## Conclusion

These findings can be helpful for identifying perceived benefits and barriers in different age and sex groups. So we can propose some suggestions to enhance physical activity among them. For example, competitive physical activity opportunities must be prepared for adolescents. Also, in youth males, it is better preparing physical activities that enhance physical performance (such as strength or flexibility).

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# The automaticity of physical activity and sedentary behavior

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**Keywords**: Attitude, implicit, impulsive, dual-process

## ***Introduction***

In a society where less than 45% of American adults meet aerobic physical activity guidelines, exercise psychology research is critical for understanding and intervening successfully on factors that motivate physical activity. From a dual-process perspective, motivation can be explained in terms of (a) reflective (or controlled) processes which are slow, effortful, and of which people tend to be self-consciously aware, and (b) impulsive (or automatic) processes, which are rapid, involuntary, and often lie outside of conscious awareness. To date, physical activity motivation theories have emphasized reflective processes, such as attitudes, efficacy beliefs, and goals, and paid little attention to how automatic processes which may play a role in regulating physical activity. In this presentation, I will focus on recent findings from my group and others related to how two forms of automatic processes have been linked with physical activity and sedentary behavior: habit strength and evaluations (i.e., implicit attitudes).

When a person develops a habit, contextual cues prompt conditioned behavioral scripts. Habits can be functional or dysfunctional depending on the behavior that is scripted, but there is no question that they are efficient mechanisms of behavioral regulation because they offload self-regulatory demands to the environment. In this talk, I will (1) provide an overview of the function of habits in regulating physical activity and sedentary behavior, (2) review a series of studies investigating the functions of habit strength in regulating physical activity and sedentary behavior, and (3) discuss how these findings are being translated into interventions to promote physical activity and reduce sedentary behavior.

Under a separate motivational mechanism, people constantly monitor their environments and evaluate the valence of stimuli (e.g., good or bad, helpful or harmful). Those evaluations can occur automatically without any effort or intention. Such automatic evaluations unfold in a matter of milliseconds and give rise to an initial behavioral impulse to approach or avoid the target of the evaluation. Further reflection may lead people to override their initial evaluation and self-regulate their behavior in light of consciously-held beliefs and goals; but absent conscious self-regulation, the automatic evaluation should predict behavior. In a series of studies, my group has measured automatic evaluations using a timed sorting task known as the Single-Category Implicit Association Test. Response times on this test were used to infer whether individuals associated physical activity more strongly with “good” or “bad” attributes. In this talk, I will (1) describe this measurement approach, (2) review a series of studies indicating that these automatic evaluations of physical activity predict future physical activity, and (3) discuss how these findings can be translated into interventions to promote physical activity.

## ***Objectives***

This presentation has three main objectives. First, I aim to outline the functions of automatic motivational processes which have been linked with physical activity and sedentary behavior. Next, I plan to review recent findings from my group and others which support the role of these processes in regulating behavior. Finally, I will describe how these findings are being translated into new intervention approaches that articulate with contemporary health trends.

## **Conclusion**

The evidence and arguments in this presentation will lead to two major conclusions. First, automatic processes are an important component of physical activity motivation which require increased attention. Second, translational research to develop interventions based on these findings may have unique public health impact and should be a priority for future work.

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## Sport health at worplace

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**Keywords**: Company, health, sport, work

This roundtable presents the state of relations between work life and "sport health workplace" (SHW) , including frequently asked questions about the relationship between physical activity and well-being at workplace (

health workers , feeling welfare issues , absenteeism ...) and in a more economic perspective, the relationship between "sport health business" and productivity (sense of collective efficacy, team building, ... ).

For this purpose, the subject will:

- Reviewing the literature of the field.
- Describing the public health issues related to the development of the ESS as well as different actions or political projects aimed at promoting the SHW in the territory.
- Asserting feedback pilot development activities SHW performed on the territory under institutional collaboration between organized labor and management.
- Highlighting the experience of professionals in the world of business and promotion structures and managerial SES engaged in development activities.

In this context, the panel will attempt to answer these important questions:

- What are the main personal and institutional resistances to the development of workplace health sport?
- What are the determining factors for the emergence of physical activities within companies?
- What are the best management practices to facilitate the development of sport in health business?
- What are the most suitable for the development of business health sports accompanying institutional strategies?



# Physical activity and health: the positive and negative effects of physical exercise

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**Keywords:** Physical exercise, mental health, eating disorders, cognitive functions, motivation, psychological skills

## Overview

A number of studies focused on the relationships between physical exercise and health issues. However, it remains difficult to generalize the results of such studies: the relationship between exercise and health depends on the specificity of the population and will not be the same for every health issue (Décamps & al, 2014). Then, this symposium aims at presenting the different kinds of scientific studies specializing in the relationships between physical activity and health. The 5 communications of this session will propose to compare the results of such studies for different populations (sportsmen, patients with eating disorders, elder people, college students) when considering different health issues (mental health, eating disorders, cognitive functions, psychological skills) and the positive and negative consequences of physical exercise.

The first presentation (Julie Salla, University of Bordeaux) will focus on the negative consequences of intensive physical activity on sportsmen's mental health and its relations with a specific pattern of the sport environment: parental over-involvement. The second one (Laurence Kern, Université Paris Ouest) will propose to consider the relation that patients suffering from anorexia nervosa have with physical activity and to test the efficacy of a physical intervention on eating disorders. In the following communication (Anne Canivet, University of Poitiers) the positive effects of physical exercise on seniors' cognitive functions will be studied in order to determine whether exercise might offset the harmful effects of genetic polymorphisms related to health issues. The fourth communication (Alexis Ruffault, Paris Descartes University) will propose to focus on the links between mindfulness and motivational regulation in the context of physical activity among college students. And finally, the fifth communication (Laurence Kern, Université Paris Ouest) will propose to determine how psychological characteristics and health issues of college students might be predictive of their physical condition.

The theoretical backgrounds and results of these five presentations will be discussed (1) from a methodological point of view in order to determine whether general conclusions about the relations between health and physical activity might be drawn and (2) from a practical point of view in order to consider if such research designs might be useful when considering health issues among other specific populations.

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# Parental sport overinvolvement and depression among elite junior tennis athletes

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**Keywords**: Depression, elite tennis players, parental overinvolvement

## ***Introduction***

The high intensive practice in sport is not without psychological risk for the child and the adolescent (stress, internalized troubles, burn out, eating disorders, doping...). Anyway, unless there is some evidence of psychological difficulties which are associated with high intensive practice, the knowledge is still limited, notably concerning the effects of parental influence on the young athletes 'mental health.

## ***Objectives***

The objectives of this study were: 1) to examine the effects of high intensive practice on the psychical and physical health of elite junior tennis athletes 2) to study more specifically the effects of parental overinvolvement on their depressive symptoms.

## ***Method***

The sample consisted of 91 adolescents (10 to 18 years old) and their parents (N=78). The adolescents were the best regional and national athletes from France. All of them trained more than 8 hours per week and were integrated in an athletic structure. They responded to questionnaires focused on the assessment of mental health (stress, depression, injuries, substance use) and perceived parental sport overinvolvement. Parents responded to questionnaires on parental sport overinvolvement practices.

## ***Results***

The prevalence of depression among adolescent athletes was 17.8%. More than one adolescent out of two was injured in the last 12 months. Regarding substance use, 38.5% of them had used a drug against pain during the year and 42.9% of them consumed supplements. The results of the linear regression analysis also showed that parental sport overinvolvement predicted significantly depressive symptoms among elite junior tennis.

## ***Conclusion***

The results highlight the issues associated with parental overinvolvement regarding adolescents' mental health as they are enrolled in a context of sports excellence. Preventive actions could be carried out in an educational perspective in order to prevent the diseases associated with pressure success.

## Physical activity and anorexia nervosa

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**Keywords**: Physical activity, Anorexia Nervosa, hyperactivity, adapted physical activity program

### **Introduction**

Anorexia Nervosa (AN) is an eating disorder with considerable morbidity and mortality. Hyperactivity (HA) is a commonly observed symptom in AN and has a significant prevalence in this population, reaching up to 50% (Davis & Kaptein, 2006). Also referred to as compulsive or excessive exercise in the literature, HA describes a rigid, driven urge to exercise. It occupies a central role in the psychopathology and chronicity of AN, as well as time and efficiency of treatment. HA makes AN harder to treat due to increased caloric needs, considerable resistance to medical therapy and multiplied somatic complications.

### **Objectives**

The main objectives of this research is first to quantify the level of physical activity (PA) of patients suffering from AN, and secondly to determine the relation those patients have with PA (motivations, problematic physical activity) relative to the practice of PA in participants from the general population, matched for age and gender.

### **Method**

At present, 12 AN patients (aged between 13 to 25 years old) from the department of psychiatry of the Institut Mutualiste Montsouris agreed to participate in this study, with ethical permission granted from CPP and CNIL. For the comparative analyses, 150 participants (aged between 13 to 25 years old) from University and different secondary schools were recruited. Questionnaires contained measures assessing: PA (GLTEQ, GPAQ), relation with PA (dependence scales: EDS, EDQ), eating disorders symptomatology (EDE-Q) and quality of life (DUKE). For the study concerning the adapted PA program, a pre-test will be conducted in time 1. In order to describe and understand PA behaviours, descriptive statistics, ANOVAS (to compare participants without AN and AN patients) and multiple regression analyses (with physical activity and exercise dependence as the dependent variables) were carried out.

### **Results**

Initial analyses confirm the fact anorexia nervosa inpatients report a higher level of physical activity than participants from the general population. Regarding problematic physical activity, anorexia nervosa patients report spending significantly more time for practicing physical activity while they report dedicating significantly less time for other activities. These patients exercise despite injuries and display a higher tolerance score than controls. Patients suffering from anorexia nervosa practice more physical activity with the main motivation to be physically attractive, and secondly, to lose/control their body weight. An adapted physical activity program, based on muscle strengthening and body expression/language has allowed, after 6 weeks, to significantly impact the score of reduction of other activities and of the time spent exercising according to EDS.

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# Polymorphisms, physical activity and cognitive functions in elderly

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**Keywords**: Genetic polymorphisms, memory, executive functions, physical activity

## **Introduction**

During the aging process, several molecular and cellular mechanisms malfunction in brain (Grady, 2008). In other respects, studies demonstrate the positive effects of physical activity on cognitive function in elderly populations (Lautenschlager, Cox, & Cyarto, 2012). Nevertheless, the benefits of exercise are not similar for all (Audiffren, André, & Albinet, 2011). Genetic variants seem to regulate many molecular pathways and exercise appears to compensate the deleterious effects of several polymorphisms (Raz, Rodrigue, Kennedy, & Land, 2009). In the present study, we focused our research on three polymorphisms: COMTval158met regulating dopaminergic function, BDNFval66met coding a neurotrophin and APOE4 involved in cholesterol transport.

## **Objectives**

The principal aim of this study is to characterize the effects of exercise (more than 600 METs a week) on different cognitive function according to three genetic polymorphisms.

## **Method**

A sample of 466 retired seniors (Age > 55) participated to a large survey conducted in Poitou-Charentes. We assessed the genetic polymorphisms based on buccal swabs, physical activity level through questionnaires, and cognition with neuropsychological tests.

## **Results**

Several analyses of variance will be conducted with genetic polymorphisms (favourable vs unfavourable allele carriers) and physical activity level (low vs high level) as between-subjects factors on cognitive performances, and age and education as covariates.

## **Conclusion**

Physical activity seems to be a promising lifestyle to offset the harmful effects of some genetic polymorphisms.

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# **Sedentarity in students: the links between mindfulness and motivational regulation toward exercise**

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**Keywords**: Mindfulness, physical activity, self-determination theory, linear models analysis

## ***Introduction***

The World Health Organization (2010) considers the lack of physical activity (PA) as the fourth risk factor of mortality in the world. Mindfulness is commonly defined as a non-judgemental and moment-to-moment awareness of the present experience (Kabat-Zinn, 1990). In order to explore the links between mindfulness and healthy behaviours, literature showed that the more students are implicated in mindfulness then the more they become involved in healthy behaviours such as good sleep quality, diet, and exercise. Thus we may ask: what is the role of motivation in a mindful behaviour change? In the behaviour change motivation literature, great interest is given over to the Self-Determination Theory (SDT; Deci & Ryan, 1985). The main results of the SDT-based studies are an increase of PA levels and intrinsic motivation, and a greater basic needs satisfaction for the SDT-groups. In studies regarding the promotion of PA, one investigating the links between mindfulness and PA, or others involving intrinsic motivation and PA have been done, but no link has been investigated so far.

## ***Objectives***

This study aims to investigate the links between mindfulness and motivational regulation in the context of PA among students. We hypothesized that mindfulness has a moderating or a mediating role in the relationship between motivation toward exercise and PA level.

## ***Method***

280 French students across 3 cities, excluding psychology and sports sciences students, were asked to fill AAQ-II for acceptance level, MAAS for dispositional mindfulness, BREQ-II for motivational regulation toward exercise, and IPAQ for PA level. We ran statistical analyses in R.

## ***Results***

Statistical analyses were run on 244 participants, excluding those with missing data. Our sample is composed of 42% males, with a mean age of 21 years old. We tested all the possible linear models with PA level for response. The best fitting linear model reveals that dispositional mindfulness has a moderating role in the relationship between intrinsic motivation toward exercise and PA level ( $R^2=.12$ ;  $F(3, 240)=10.88$ ;  $p<.001$ ). Each regression coefficient is significant at a 5% threshold in this model. These results are concordant with our main hypothesis.

## ***Conclusion***

In our ad-hoc sample, dispositional mindfulness has a moderating role between intrinsic motivation toward exercise and PA level.

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# Physical activity and mental health: what are the students' psychological assets?

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**Keywords**: Health, students, ressources, positive psychology

## Introduction

French studies with respect to students' health are mainly focussed on pathological factors such as, depression, anxiety and excessive consumptions (alcohol, nicotine, cannabis). There are very few studies that take into account the psychological resources and the actual physical condition of the students and the relationship between these objective and subjective factors. According to Boujut (2010), a significant deterioration in healthy behaviours and lesser awareness with respect to risky behaviours that can lead to both short term and long-term health problems (for example, cardiovascular risks caused by smoking, diet) is observed amongst students. However, the practise of a physical activity is recognised as the key element in a balanced and healthy lifestyle for its mental and physical benefits (WHO 2010, pg. 20). According to a recent study (Kern et al, 2013) 37.6% of students (N`164) declared not practising a physical activity (sedentary lifestyle). Those who practiced do so primarily to be healthy and then in order to lose weight. If 37% of students seem relatively inactive, 4.4% practice physical activity excessively in a problematic manner (N=21) (exercise dependent). One can say, moreover, that the quality of life and health status of students is a challenge with respect to their life trajectories in terms of their course of health, and their academic futures.

## Objectives

The objectives of our study are as follows: 1. Describe the mental and physical health of students through a dimensional perspective. 2. To highlight the psychological assets that they have with respect to the practice of a physical activity. This in turn will help us to develop appropriate prevention strategies.

## Method

A cross-sectional study was conducted on the campus of Nanterre University. In the first phase (November-December 2013), voluntary students participated in a survey conducted by administering a questionnaire. Standardized instructions were given to all the participants by trained interviewers. The questionnaire measured happiness, quality of life, self-esteem, the practice of a physical activity, satisfaction with respect to academic orientation and results, consumptions (alcohol, tobacco and cannabis), coping flexibility, anxiety, depression, stress and disordered eating. In order to describe, understand and explain exercise behaviours, descriptive statistics, ANOVAS (to compare sedentary students with active students) and multiple regression analyses (with physical activity as the dependent variable) will be carried out. In the second phase (January 2014), along with responding to the questionnaire certain students also participated in fitness test to evaluate their physical condition.

## Results/Conclusion

Analyses are currently being conducted on the data and the results shall be presented during the conference.

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## Genre et activités sportives: perspectives actuelles

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**Mots-clés:** Genre, stéréotypes, compétence, estime de soi, motivation

### ***Présentation générale***

Historiquement, le contexte sportif a toujours été marqué par la question du genre. Bien que des évolutions importantes aient été observées au cours des dernières décennies en termes de représentations dans la société, et d'engagement plus important des femmes dans la pratique, celui-ci reste globalement un domaine masculin. De plus, le contexte sportif lui-même est aujourd'hui encore l'objet d'un marquage sexué, en fonction des activités concernées. Il apparaît donc légitime de poursuivre des travaux en psychologie sociale dans ce champ.

L'objectif de ce symposium sera double. Premièrement, plusieurs présentations auront pour objectif de mettre en évidence la façon dont la question du genre touche différemment les activités sportives, ainsi que différents aspects du soi physique. Il s'agira d'autre part de proposer des procédures permettant d'étudier l'effet potentiel de croyances de façon moins directe que traditionnellement.

François Ruchaud présentera un outil multidimensionnel qui renseigne sur la façon dont les individus perçoivent leur catégorie sexuée, et indiquera en quoi ces cognitions varient selon le sexe des répondants et le typage sexué de l'activité sportive pratiquée.

Julie Boiché présentera une étude des stéréotypes sexués relatifs au sport, à l'identité sexuée et sportive, examinés de façon explicite et implicite, en fonction du sexe et du type d'activité pratiquée (masculine / neutre / féminine).

Aïna Chalabaev présentera une étude expérimentale sur les effets de l'activation d'un stéréotype sexué sur la concentration lors d'une tâche cognitive réalisée préalablement à une tâche motrice.

Enfin, Nicolas Margas présentera une étude montrant la structure à deux composantes – satisfaction et évaluation de soi – de l'estime de soi physique et l'impact différencié des stéréotypes de genre en fonction de la composante considérée.



# Identité de genre et sport: une approche multidimensionnelle

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**Mots-clés:** Identité de genre, sport

## Introduction

Le genre représente un élément important de l'identité humaine. Être né(e) fille ou garçon a en effet des implications qui portent bien au-delà des différences physiques, puisque cela impacte également les traits, les préférences, et les comportements des individus (Ruble, Martin, & Berenbaum, 2006). Alors que l'identité de genre a longtemps été appréhendée au travers d'une dimension, cette perspective a récemment été remise en question au profit d'une approche multidimensionnelle incluant non seulement les dimensions traditionnelles de l'identité de genre, mais aussi des dimensions cognitives telles que la satisfaction de son sexe biologique, la pression ressentie pour se conformer aux stéréotypes de genre, la typicité avec son sexe et le biais intergroupe (Egan & Perry, 2001).

## Objectifs

L'objectif de cette étude était double : 1) valider en français l'échelle multidimensionnelle de l'identité de genre pour adolescent (Egan & Perry, 2001) et 2) examiner les liens entre les différentes dimensions de l'identité de genre et la pratique d'une activité sportive congruente ou non avec son genre.

## Méthode

Quatre-vingt-dix-sept élèves de deux niveaux de classe (6<sup>ème</sup> et 3<sup>ème</sup>) ont participé à la validation du questionnaire suivant les principes édictés par Vallerand (1989). Les questionnaires ont été administrés en version « papier-crayon » en groupe classe pendant une heure d'EPS en présence de l'enseignant. Comme pour l'étude d'Egan et Perry, nous avons réalisé des analyses en composantes principales avec rotation varimax. Puis, après validation, 100 sportifs ont rempli ce questionnaire sous forme informatisée.

## Résultats

Les résultats de l'analyse en composantes principales confirment la présence des 4 facteurs : la satisfaction de son sexe, la pression ressentie pour se conformer aux stéréotypes de genre, la typicité avec son sexe et le biais intergroupe. Puis, nous avons réalisé des analyses de variance (ANOVA) sexe (garçon vs fille) x classe (6<sup>ème</sup> vs 3<sup>ème</sup>) sur les différentes dimensions de l'identité de genre. Conformément aux résultats d'Egan et Perry (2001), nous trouvons que les garçons ont des scores plus élevés que les filles sur la typicité, la satisfaction et sur la pression ressentie, alors que les filles ont des scores plus hauts sur la dimension biais intergroupe. Concernant les sportifs, les données sont en cours de traitement.

## Conclusion

Cette étude valide en français une échelle multidimensionnelle sur l'identité de genre pour adolescent et confirme l'effet du sexe sur les dimensions cognitives de l'identité de genre.

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# **Stéréotypes sexués, identité sexuée et identité sportive: Une approche basée sur des mesures explicites et implicites**

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**Mots-clés:** Stéréotypes, soi, implicite

## **Introduction**

Différents processus psychologiques ont été mis en évidence comme facteurs potentiels de l'abandon sportif, tels que les perceptions de soi ou les stéréotypes sexués (Boiché et al., in press). Toutefois, certains auteurs préconisent de prendre en compte simultanément et d'examiner la cohérence des cognitions relatives à la catégorie sexuée ainsi qu'au soi (Tobin et al., 2010 ; par exemple, la triade stéréotype sexué relatif au sport, identité sportive et identité sexuée).

## **Objectifs**

L'objectif de cette étude était d'examiner la triade stéréotype sexué – identité sexuée – identité sportive au travers d'outils explicites et implicites, et d'examiner d'éventuelles différences sur ces variables en fonction du sexe et du type d'activité pratiquée par les participants (*l'abandon de l'activité sera mesuré en fin de saison*).

## **Méthode**

Cent soixante-douze sportifs (M = 14 ans ; ET = 1,7) ont (1) réalisé trois tests sur ordinateur (BRIEF-IAT) visant à estimer la force des associations implicites SOI-SEXE, SOI-SPORT et SEXE-SPORT ; (2) complété un questionnaire portant sur leur identité sportive, leur identité sexuée (Luhtanen & Crocker, 1992) ainsi que leur degré d'adhésion au stéréotype sexué concernant le sport.

## **Résultats**

Concernant les scores obtenus pour le questionnaire, une série d'ANOVAs à deux facteurs a révélé (1) des niveaux de stéréotypes sexués pro-masculins plus importants chez les garçons, et chez les adolescents pratiquant des sports masculins ; (2) une identité sexuée plus faible chez les garçons pratiquant des sports féminins ; et (3) une identité sportive plus forte chez les garçons.

Concernant les scores obtenus aux tests implicites, les ANOVAs ont révélé une association automatique plus orientée vers féminin pour les filles, mais aucune différence selon le sexe et le type de sport pratiqué concernant les associations SPORT-SEXE et SOI-SPORT.

## **Conclusion**

Les résultats observés varient selon le type de mesures utilisé (explicites et implicites) ; il sera particulièrement intéressant d'examiner quels scores – et quels profils – sont prédictifs du maintien de l'engagement versus l'abandon de l'activité sportive.

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# Effet des stéréotypes sexuels relatifs à la force physique sur la motivation: le stereotype lift

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**Mots-clés**: Stereotype lift, effort cognitif, stéréotypes sexuels

## **Introduction**

Les recherches antérieures indiquent que l'exposition à des stéréotypes négatifs envers d'autres groupes que ceux auxquels on appartient peut améliorer la performance en augmentant la confiance en soi et l'effort cognitif, un phénomène appelé *stereotype lift* (Walton & Cohen, 2003). Cependant, nous en savons peu sur la nature de l'effort cognitif impliqué dans cet effet.

## **Objectifs**

Cette expérience a étudié l'effet de stereotype lift sur l'attention soutenue (i.e., la capacité de garder son attention focalisée sur la tâche en continu). Nous avons examiné si l'exposition au stéréotype à propos des différences sexuelles de force physique augmenterait l'attention d'hommes avant de réaliser une tâche de force (serrer un handgrip le plus longtemps possible), indiquant un effort cognitif accru.

## **Méthode**

Vingt-huit étudiants en Sciences et Techniques des Activités Physiques et Sportives ont pris part à cette expérience. Après avoir effectué une tâche mesurant l'attention soutenue (le Sustained Attention to Response Task, Robertson et al., 1997), ils ont été assignés aléatoirement dans l'une des deux conditions suivantes : il leur était dit que l'étude investiguait les différences de performance sur la tâche de handgrip entre les sexes dans la condition stereotype lift, ou entre les individus dans la condition contrôle. Ils ont ensuite réalisé une seconde fois la tâche d'attention, la différence de performance pré- et post-induction expérimentale servant de variable dépendante dans les analyses. Enfin, ils ont réalisé la tâche de force afin d'assurer la crédibilité de l'étude, sans que la performance ne soit prise en compte.

## **Résultats**

Les résultats ont montré un effet de la manipulation expérimentale sur l'attention soutenue,  $t(27) = 2.19$ ,  $p = .04$ , 95% CI [.004, .129],  $d = 0.84$ , les fluctuations attentionnelles diminuant davantage dans la condition stereotype lift que dans la condition contrôle.

## **Conclusion**

En accord avec la théorie du stereotype lift, cette expérience confirme qu'activer les stéréotypes sexuels relatifs à la force physique peut augmenter l'investissement cognitif parmi les hommes, et plus spécifiquement l'attention soutenue. Les études futures devront explorer les implications de cet effet, notamment en termes de performance.

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- Walton, G. M., & Cohen, G. L. (2003). Stereotype Lift. *Journal of Experimental Social Psychology*, 39(5), 456-467.

# Mieux comprendre l'influence des stéréotypes de genre sur l'identité en différenciant les composantes évaluatives et affectives de l'estime de soi physique

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**Mots-clés:** Stéréotypes, estime de soi, multitraits-multiméthodes, satisfaction de soi, évaluation de soi

## Introduction

L'estime de soi possède deux composantes distinctes mais corrélées (Tafarodi & Swann, 1995). La première (« évaluation de soi ») se construit via l'observation de nos capacités à interagir efficacement avec l'environnement. La seconde (« satisfaction de soi ») se base sur les jugements affectifs de nous-mêmes au regard de critères sociaux internalisés comme les stéréotypes.

## Objectifs

Cette analyse multitraits-multiméthodes vise à montrer (1) la validité de cette proposition pour les dimensions sport et apparence de l'estime de soi, (2) le lien spécifique des stéréotypes de genre et la composante satisfaction de soi par rapport à la composante évaluation de soi en accord avec la nature de ces construits et (3) l'amalgame actuel entre ces composantes dans les outils de mesure de l'estime de soi physique.

## Méthode

389 étudiants (148 femmes, 241 hommes;  $M_{age} = 20.07$ ,  $ET = 1.85$ ) ont rempli un questionnaire comportant (1) 2 mesures d'évaluation de soi issues des échelles du Physical Self-Description Questionnaire (PSDQ) (Guérin et al., 2004) et adaptées de l'échelle « self-compétence » de Tafarodi et Swann (1995) aux dimensions sport et apparence, (2) 2 mesures de satisfaction de soi sur ces mêmes dimensions adaptées de l'échelle « valeur physique » du PSDQ et de l'échelle « self-liking » de Tafarodi et Swann (1995).

## Résultats

Les corrélations inter-méthodes et inter-construits sont conformes aux hypothèses. Les indices du modèle d'équations structurales de notre proposition théorique sont convenables ( $\chi^2(21) = 133.75$ ;  $GFI = .94$ ;  $NNFI = .96$ ;  $CFI = .98$ ;  $SRMR = .03$ ). Les ANOVAs révèlent des interactions significatives entre le sexe et les deux composantes pour la dimension apparence,  $F(3, 1161) = 8.95$ ,  $p < .0001$ ,  $\eta^2p = .022$ , et la dimension sport,  $F(3, 1161) = 6.25$ ,  $p < .001$ ,  $\eta^2p = .016$ .

## Conclusion

Les stéréotypes de genre sont donc liés différemment aux deux composantes de l'estime de soi physique puisque, pour l'apparence, les évaluations de soi des hommes et des femmes sont plus proches que les satisfactions de soi ne le sont et que l'inverse est observé sur la dimension sport. Considérer l'estime de soi physique avec deux composantes permet de mieux situer l'impact identitaire des stéréotypes de genre. Ces résultats montrent aussi la confusion des deux composantes dans les outils, théories et terminologies actuels de l'estime de soi physique.

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# **Self-control and willpower: research on mechanisms and applications in exercise and health psychology**

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**Keywords**: Self-control, self-regulation, willpower, strength model, physical activity

## ***Introduction***

Low levels of moderate-to-vigorous exercise are associated with a multitude of health problems, including cancer, cardiovascular disease, obesity, and diabetes (WHO, 2008). Despite this evidence people in both industrialized and developing nations do not engage in sufficient moderate-to-vigorous exercise to gain health benefits and few meet national guidelines. Researchers have identified lapses in *self-regulation* as an important psychological mediator of numerous health-related behaviors including exercise (Dishman, 1994). The capacity to abstain from gratifying immediate needs and desires is extremely adaptive and enables people to engage in goal-directed behavior to bring about long-term desirable outcomes. People able to exert self-control over a particular behavior or action are more likely to be successful in executing that action. In contrast, lapses in self-control can result in an inability to adhere to behaviors and actions. Self-regulatory failure is related to many of the problems and difficulties that people encounter such as excessive personal debt, substance abuse, obesity, unplanned pregnancy and sexually transmitted disease, and crime and violent behaviour (Tangney et al., 2004). Adherence to exercise constitutes a prime example of a behavior that requires people to exert self-control, where failure to self-regulate results in lapses in adherence and desistance. In essence, physical inactivity may result from self-regulatory failure. As a consequence, it is important to understand the psychological processes that lead to successful self-regulation and those that lead to its failure. A theory of self-regulation is essential if effective interventions to promote or increase self-regulation and promote adherence to exercise are to be developed.

## ***Self-control and exercise behaviour***

In this presentation I will evaluate the role of self-control on the regulation of health-related behaviour, and, specifically, health-related exercise behavior. I will initially adopt the perspective of the strength-energy model of self-control (Baumeister et al., 1998). I will begin with an outline of the hypotheses and predictions of the strength-energy model of self-control and its implications for exercise. Specifically, I will outline the main predictions of the limited resource model including methods typically adopted to test the model and the universality of the effect across self-control domains. The salience of self-control strength depletion for the self-regulation of exercise behavior will be highlighted. I will then demonstrate how self-control resources can be incorporated into traditional social-cognitive theories and models typically adopted to explain health-related exercise behaviour, such as the theories of reasoned action and planned behaviour. I will outline how the different levels of generality of self-control, trait and state, may serve to independently predict exercise intentions and actual behaviour, but also how they serve to moderate intention-behaviour relationships.

## ***A new model: The Health Self-Control (HSC) Model***

Based on previous evidence and proposals from the strength model and social-cognitive models of health behaviour, I will propose a new model, the Health Self-Control (HSC) Model (Hagger, 2013). The model maps out the multiple processes by which trait and state self-control predicts exercise behaviour (Figure 1). Specifically, the model demonstrates how trait self-control impacts behaviour through intentional and non-intentional (implicit) processes. It also outlines how trait self-control resource availability may moderate the effects of intentions and implicit motivation on actual exercise behaviour. The model also

specifies that state self-control resource availability (extent of ego-depletion or fatigue), as a function of trait self-control may serve as a predictor of behaviour through implicit motives but may also serve as a limiting factor on the conversion of good intentions into behaviour. I will outline future directions for research adopting the area of exercise that arise from the HSC model. I will conclude with the implications of the model for exercise promotion and provide practical recommendations for specialists interested in the promotion of exercise behaviour and adherence to exercise.

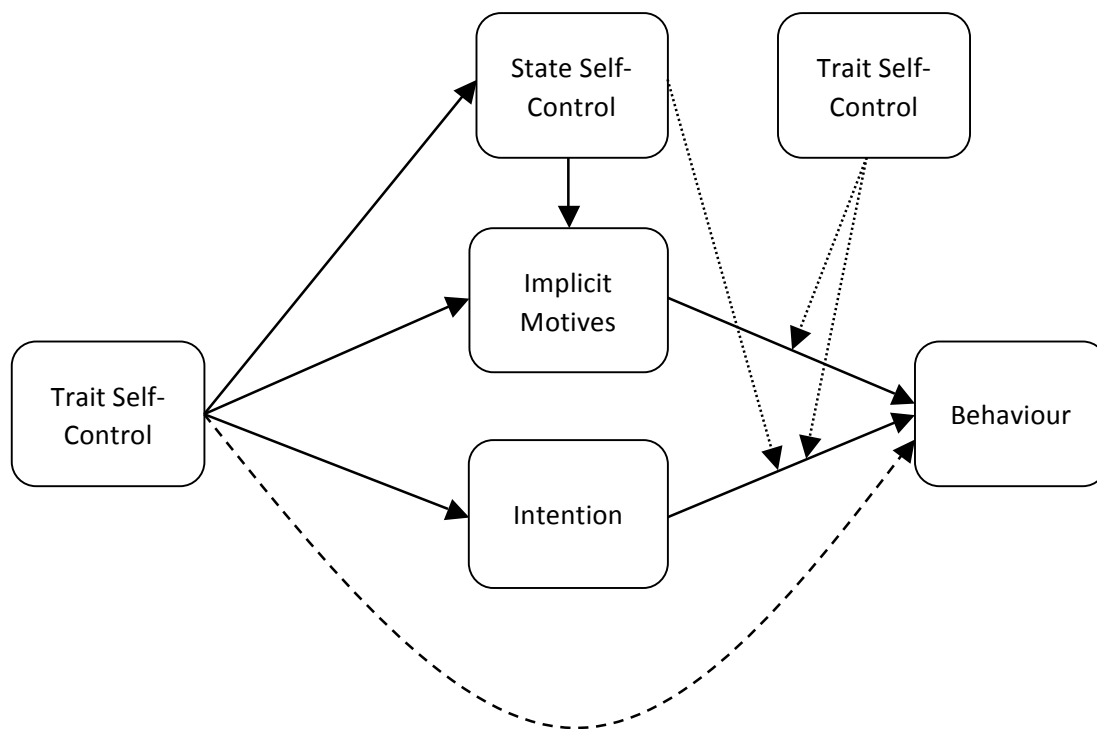


Figure 1. The *Health Self-Control (HSC) Model*

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## Activity-centered approach in sport: plurality of issues, scales and levels of analysis

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**Keywords**: Situated action, experience, historicity, learning, performance, macrocognition

### Overview

The "activity-centered approach" emerged during the last decade in the field of sports science, and more specifically in the field of sport psychology (e.g., Bourbousson et al., 2010; Hauw, 2009). In summary, it consists in a holistic approach of sport performance, sport training or coaching whereby such activities are considered from a phenomenological perspective (i.e., giving a central place to the "first-person" experience). The phenomena under study are assumed to be organized and meaningful totalities for the subjects, by contrast with a set of distinct psychological processes. Accordingly, this perspective implies a definition of the units of analysis in a different way than what is typically performed in sport psychology. Therefore it opens a pathway that is alternative and complementary with regards for the existing theoretical and methodological frameworks in this field. Within an activity-centered approach, the activity of sports actors is assumed to be fundamentally situated. The activity and its context are mutually determined, so that the activity cannot be described out of the material, social and cultural conditions in which it takes place. From this perspective the focus is on the actor/environment coupling. This coupling is conceived as being asymmetric because of the self-determination of the actor's perspective: the environment with which an actor interacts does not rely on "objective" characteristics (i.e., as seen from the outside). Instead, this environment is built by the actor in relation to his "own-world", i.e., the meaningful world emerging from the actor's point of view. Moreover, the activity is seen as a dynamic process, whose historicity is one of the main characteristics. Thus, the activity at each instant is part of "meaningful stories" for actors, which extend in various time scales: e.g., from the story of an individual unit of decision-making to the story of the activity unwrapped on a sports season, an Olympic preparation, or a career.

Depending on the specificities of the practices under study and of the research issues, this symposium aims to demonstrate how an activity-centered approach, (a) can be carried out on various time scales and on multiple levels of organization of the activity, and (b) can highlight empirical phenomena that are of interest both for research and practitioners (i.e., sport psychologists). First, the introduction section will present the main assumptions of an activity-centered approach in sport. Four original empirical studies will be presented to highlight the theoretical and methodological variety of this approach, depending on various scientific and practical interests.

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# Experiential and mechanical data crossed analysis for a better understanding of sports performance.

## Case study on expert interpersonal coordination in rowing

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**Keywords:** Combined methods, interpersonal coordination, performance, rowing

### **Introduction**

In sports, activity-centered approaches have mainly described qualitatively the cognitive phenomenology of the athletes. However, some recent studies have combined athletes' feelings about the performance from an inside point of view and measures collected by the researcher (i.e., from the 'outside'). They aimed to characterize the activity constraints and/or effects which are not always perceived by the athletes, but are likely to favor a better comprehension of their activity (e.g., Sève et al., 2013).

### **Objectives**

The aim of this study was to characterize interpersonal coordination of rowers based on a mixed analysis of rowers' course of action (Theureau, 2006) and of mechanical parameters. Extending Sève's et al. work (2013), it was more specifically focused on a whole race of high level rowers.

### **Method**

A French elite men's coxless pair crew was filmed during a pre-competitive test against the clock. On this basis, self-confrontation interviews were performed with both rowers. Mechanical data (i.e., oar angle and oarlock force) were collected thanks to the *Powerline* system (Peach-Innovations®). The global analysis combined collective coupling of the rowers' courses of action and the mechanical parameters analysis (e.g., variability of the relative phase between oars' angles in the horizontal plane).

### **Results**

The race was divided into four successive periods based on (a) mutual rowers' adjustments patterns, and (b) the kind of interferences between their courses of action. The analysis (in progress) of the mechanical data for these periods should allow an identification of the index that will account for the relation between subjective and objective dimensions of the performance.

### **Conclusion**

Beyond scientific interests, results will provide a better understanding of the performance of rowing crews, and thus open some interesting perspectives for training.

**Grants:** This research was funded by the Région Pays de Loire as part of the project ANOPACy.

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## **Prerogatives of each in the officials' coordination during a match: From rules to activity**

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**Keywords**: Refereeing, football, judgment act, recognition, coordination

### **Introduction**

Refereeing is often considered as a rules application process to a reality. But an analysis of the referee's activity as it occurs during matches leads to a new conception of refereeing. A referee performs judgment acts (Rix, 2005): (1) he establishes the acceptability of the game situation and simultaneously (2) he shows to the players what is possible. However a referee is not alone on the field; two assistants can participate in refereeing. The rules prescribe the prerogatives of each. In order to determine if and how each official contributes to judgment acts, this study considers not only the officials' activity as it should be but as it occurs during matches.

### **Objectives**

Determining the way in which officials coordinate each other to contribute to: (1) establish the acceptability of the game situation and (2) show to the players what it is possible.

### **Method**

6 French elite professional football games have been studied. The researcher conducted individual self-confrontation interviews with each of the 6 referees and the 12 assistants. Using a video recording of the game enables each participant to relate to a particular lived-experience, especially to make explicit what matters for him when his partners' actions (including radio communications) are significant. For each judgment act the officials' verbalizations have been put into perspective.

### **Results**

During the game, the officials' coordination is notably based on each one's recognition of the prerogatives of each to intervene in judgment acts. In the lived situation, the way each official contributes to show what is possible refers to the recognition of prescribed prerogatives. This recognition is based on the characteristics of the game context in connection with the rules which prescribe the individual roles in signaling tasks. In order to contribute to establish the acceptability of the game situation, one the main preoccupations of the assistants is to recognize the way the referee performs –or not– his judgment acts. Thus, the assistant reconfigures his own prerogatives to be compatible with the way the referee uses his prerogatives. Along the game, the assistant is concerned about the way the referee judges the acceptability of the situation. It enables the assistant to do indications or signals to contribute to establish the acceptability of this situation.

### **Conclusion**

The analysis of officials' respective activity shows their compliance with the prescriptions related to the public part of judgment acts. It demonstrates also the need to access to subjective perspectives to grasp the way they coordinate for establishing the acceptability of the situation.

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# Transformation of the teamwork dispositions across the career: analysis of the activity of french basketball team members involved in the 3 on 3 championships

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**Keywords**: Situated cognition, course-of-action, sporting life courses, career transition

## ***Introduction***

The present study investigated how individual players constructed "dispositions" (Durand, 2013) in the production and development of their long life basketball activity. The focus was on the transformation of the dispositions that helped players to contribute to teamwork (i.e., "abilities to teamwork"), how they understood this activity and how they developed it.

## ***Objectives***

The purpose of the study was to analyze the experience that high level basketball professional players built across their career development. We focused on the teamwork embedded aspects of their practice and expected to highlight some team-related features of talent identification, talent development, and career transitions in basketball.

## ***Method***

Four players of the French 3 on 3 national teams volunteered to participate in this study. First, semi-structured interview were performed and allowed to collect data about the past activity of players. Second, the elements of the past activity of players that were reconstructed thanks to the first interview serve to conduct individual self-confrontation. Verbalizations retrieved from self-confrontation interviews helped to describe how the development of their activity was experienced step-by-step.

## ***Results***

The results allow to detail (a) patterns common to all the players in constructing their teamwork disposition towards the high-level 5 on 5 basketball, (b) specificities of the teamwork dispositions needed for the 3 on 3, and (c) elements related to individual trajectories of the players that help them to develop their activity.

## ***Conclusion***

Together these results suggest some regularities in how players' activity was transformed: (a) the resilience and quick reconstruction when facing sporting life events; (b) the strength with which persevering concerns are maintained; (c) the role of the coach-athlete relationships in the building of dispositions to teamwork; and (d) a preliminary construction of dispositions to individual efficiency during the pre-professional world, followed by a reconstruction of these dispositions towards teamwork.

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# A situated and dynamic analysis of athletes' sporting life courses over an Olympiad

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**Keywords**: Situated activity, course of experience, elite performance, olympic/paralympic preparation

## ***Introduction***

The Olympic Games are the most important event athletes experience once or a few times in a sporting career. They commonly relate that this event is somehow special compared to the other championships to which they may take part, emphasizing on the opportuneness of a specific preparation. Beyond some testimonies and memories of former Olympic athletes, a lack of scientific knowledge referring to this pre-Olympic period can be pointed out.

## ***Objectives***

The purposes of this study were to analyze athletes' experience during an Olympiad using a situated and dynamics approach. We expected to characterize (a) the specific properties of the activity linked to preparation of this event and (b) the trajectory of the sporting life course that led to it. Last, in line with situated activity research, we expected that the results would provide elements to enhance the management for this event.

## ***Method***

Seven Olympic and Paralympic athletes volunteered to participate in this study. The XXX Olympiad was considered (London 2012). Data were collected from secondary sources, biographical interviews to build traces of the past activity and, self-confrontational interviews to these traces. Data were gathered and coded in types of activity (i.e., execution, exploration, change of mind, planning, stifled activities). Their occurrences were identified for all the successive periods of the Olympiad that were meaningful for the athlete. Then, data were compared to identify the general dynamics transforming the activity and patterns representing typical coordination between these activities per period.

## ***Results***

Results showed that the activity during the Olympiad evolved through periods of relative stability (balanced mean number of types of activity) interspersed by edges of density (increasing number of various types of activity). In a majority of cases, observed patterns showed a coordination between stifled and execution activities. Some patterns also involved a change of mind activity and others were additionally composed by exploration and planning activities. At the edges of density, almost all types of activity were gathered.

## ***Conclusion***

These results enlightened new empiric knowledge on how do athletes could experience the time of an Olympic preparation that enables to suggest some recommendations related to the management of that specific period. It also pointed out methodological issues about the specificity of investigating a life course over a "middle" time span.

# Coping with reciprocal interactions between athletic as well as academic, psychological and psychosocial transitions: a holistic approach of within career transitions in sport

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**Keywords**: Dual career, junior-to-senior transition, tertiary education, elite sport training center, holistic athletic career model

## Overview

Research on career development in elite sport has received much attention in recent years (e.g., Stambulova & Ryba, 2013). Whereas first studies mainly focused on stages of talent development, crisis transitions and sport career termination, the last decade showed an increasing focus on within-career transitions in a holistic lifespan perspective (e.g., Stambulova, Alfermann, Statler, & Côté, 2009; Wylleman & Reints, 2010). The beginning of the mastery stage in athletic development appears as a very sensitive period as it is made up in many sports of many concurrent significant transitions such as transition from junior to senior (i.e., athletic development), transition from high school to the university (i.e., academic development), transition from family to a national training center place of life (i.e., psychosocial development). This symposium will be introduced with the presentation of a study focused on athletes' perceptions of their dual career according to the holistic athletic career model developed by Wylleman, Alfermann, & Lavallee, (2004). Then two presentations will focus on the athletic transition from junior to senior whereas a fourth one will deal with the changes and challenges that student-athletes perceive during their transition to higher education. Finally, the issue of entering a national sport training center will be touched on through the presentation of an in progress questionnaire aiming at assessing the ins and outs of the decision-making process of young elite athletes entering an elite sport training center.

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# Athletes' perceptions of their dual career

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**Keywords**: Athletic career development, dual career, holistic perspective

## **Introduction**

According to the holistic athletic career model (Wylleman, De Knop & Reints, 2013) constant interactions between different levels of athletic development (i.e., athletic, psychological, psychosocial, academic/vocational, financial) exist as the athletes progress throughout their athletic career. Transitions occurring in the sporting career (athletic transitions) are in concurrent and reciprocal interaction with transition occurring in other domains of athletes' lives (e.g. academic, psycho-social, professional). Athletes must therefore successfully develop their athletic career together with pursuing their education and/or work as well as other life domains; and this requirement is encapsulated under the term "dual career".

## **Objectives**

The purpose of this study was to (1) describe athletes' perceptions of their dual career and (2) explore these perceptions for possible gender-differences.

## **Method**

Semi-structured interviews with 12 retired elite Slovene athletes (six males and six females) were used to discuss transitions, demands and challenges which occurred throughout their dual career development. The interview guide was based on the Holistic Athletic Career model (Wylleman et al., 2013) and included the questions which encouraged participants to describe dual career experiences. The interviews were transcribed verbatim and content analyzed using the qualitative analytic software program Nvivo 10.

## **Results**

Results revealed that athletes perceived their athletic career in strong and reciprocal connection to other domains in their lives, especially their academic and vocational career. Some of the transitions occurring in their dual career were experienced as particularly important (e.g., transition to university, finishing university study) and connected to several challenges (e.g., experiencing burnout, financial difficulties). Several gender differences in dual career perceptions were identified.

## **Conclusion**

The study results provided information on where the athletes see their dual career development as particularly demanding and where an optimal career assistance support would therefore be particularly beneficial for them. Needs for further research on athletes' dual career development still exist, especially on combining athletic career with professional occupation.

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# **A holistic approach to the transition from junior to senior elite athlete: an athletes' perspective**

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**Keywords**: Junior-senior transition, holistic athletic career model, elite athletes

## ***Introduction***

Throughout their athletic career, athletes are confronted with different transitions. During these transitions athletes face challenges, not only at athletic level, but also at the psychological, psychosocial, academic/vocational, and financial level. One of the most challenging transitions in the development is the transition from junior to senior athlete. Research showed that only one junior athlete in three makes a successful transition into the elite senior ranks.

## ***Objectives***

The objective of this study is to identify the changes talented and elite athletes in Flanders face when going from junior to senior elite level.

## ***Method***

For this purpose a total of ten athletes (6 male, 4 female), one for each focus sport<sup>2</sup> in Flanders, who made a successful transition into senior level were purposefully sampled. With each of those athletes a face-to-face semi-structured interview, using the holistic athletic career model (Wylleman, De Knop, & Reints, 2011) as framework, was conducted. Open-ended questions were asked concerning the transition from junior to senior athlete on the five different levels of development (e.g., "What were the changes you experienced at athletic level when you went from junior to elite senior level?"). Interviews were transcribed verbatim and analyzed using Nvivo 10.

## ***Results***

Results indicate that athletes perceive changes at the five levels of the holistic athletic career model including, amongst others, the need to compete in a broader age category (athletic level), lifestyle becoming more crucial (psychological level), the need to live up to higher expectations of the coach (psychosocial level), the need for extra support in their dual career (academic level), and getting a professional contract (financial level). Moreover, the different levels of development were found to be interwoven, that is, changes at one level of development influence changes at other levels.

## ***Conclusion***

This study highlights the importance of considering the junior-senior transition in a holistic perspective. Moreover, taking into account the different changes faced during the junior-senior transition, it is imperative for athletes not only to be aware of these changes but also to be able to cope with them. Future research should also investigate athletes who made an unsuccessful transition in order to be able to discover what differentiates both groups of athletes. This might aid the development of appropriate support services before, during, as well as after transiting from junior into senior level might be necessary.

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<sup>2</sup>A focus sport was defined by the Flemish government as a priority sport for the 2012-2016 Olympic cycle and includes athletics, cycling, equestrian sport, gymnastics, judo, hockey, volleyball, sailing, swimming, and tennis.

# Swedish athletes' pathways in the junior-to-senior transition: a longitudinal quantitative study

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**Keywords**: The junior-to-senior transition, longitude

## **Introduction**

Previous studies showed that the junior-to-senior transition (JST) lasts for about two years, initiated by a set of demands relevant to athletic and non-athletic development, and is known for its high dropout rate (e.g., Stambulova, 2009).

## **Objectives**

The aim of this study was to investigate the JST process and identify various pathways athletes might follow in this transition.

## **Method**

This quantitative longitudinal study included five measurements that were conducted every six months, and altogether covered two-and-a-half-years with two measurements of the transition variables using the Transition Monitoring Survey (Stambulova, Franck, & Weibull, 2012) and one measurement of related personal variables each year. In the first measurement 101 Swedish athletes (74 males and 27 females) of 15 -20 years old took part. The dynamics of participants was characterized by an increasing dropout rate from each measurement to the next, as a result only 37 participants were left to the time of the final (fifth) measurement.

## **Results**

Latent Class Analysis (LCA) was conducted to identify successful and less successful transitional pathways using the quality of adjustment variable to identify the subgroups across the five measurements. As a result, five subgroups of athletes have been identified. Subgroup 1 (n=3) included the athletes who overestimated their level of adjustment at the very beginning of the transition and as a result had a negative progression. Subgroup 2 (n=4) covered the athletes with low adjustment at the beginning of the transition and a minor negative dynamics throughout the transition process. Subgroup 3 (n=34) involved the athletes who perceived themselves as having a high level of adjustment in the beginning of the transition with a positive progression throughout the study. Subgroup 4 (n=34) included the athletes with a moderate level of adjustment in the beginning of the transition and a moderate positive progression throughout the study. Subgroup 5 (n=26) covered the athletes who had moderate level of adjustment in the beginning of the transition and then achieved the highest positive progression among all the subgroups.

## **Conclusion**

LCA identified five subgroups of athletes; further statistical analysis is needed to give a more in detail description of the characteristics of each subgroup.

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# Changes and challenges perceived by student-athletes during the transition to higher education

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**Keywords**: Dual career, elite athletes, tertiary education, holistic athletic career model

## **Introduction**

Increasingly, athletes are expected to undertake tertiary education concurrently with their sporting careers. However, combining both elite sport and higher education may be challenging for promising and elite athletes. Particularly male student-athletes and student-athletes issuing from secondary education with less academic competences are academically 'at risk' and would benefit from specific support services that assist them prior and during this transition (De Brandt & Wylleman, 2013).

## **Objectives**

This study used a holistic athletic career model from Wylleman, Reints & De Knop (2013) to explore the challenges that student-athletes perceive during their transition to higher education.

## **Method**

Using a retrospective design, semi-structured interviews were used to investigate the challenges that first-year elite student-athletes perceived during the transition.

## **Expected results**

Student-athletes perceive changes in the athletic, psychological, psychosocial, academic and financial domain during their transition into higher education. Increasing standards of training and number of competitions, moving away from home to a student room, stronger need for independence, change in peer relationships, forming of a new identity, an other style of studying, time constraints, contractual obligations and increased study costs are only a few examples of the changes and challenges student-athletes face when getting involved in higher education.

The first results will be presented during the congress.

## **Conclusion**

To optimize the dual career of student-athletes, support services in higher educational institutes should be aware of the challenges that student-athletes face and provide them academic, sportive, logistic and lifestyle support prior and during the transition in order that student-athletes are able to train and compete in an elite sport environment.

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# Entering an elite sport training center: decision-making process assessment tool

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**Keywords:** Transition, young elite athletes, integration, elite sport training center

## **Introduction**

The entrance to a national elite sport training center constitutes a significant transition with multiple implications on athletes' development (Ledon, 2012). In a dual career support perspective, it is important to be able to estimate costs and profits of this transition for young elite athletes. However, at the moment, there is no tool allowing to identify incentive or dissuasive elements that accompany the decision of athletes to enter the training center. Such a tool could be helpful for dual career support providers.

## **Objectives**

The objective of this study is to build up a questionnaire for assessing the process of decision-making to enter a national elite sport training center. The push pull, anti-push anti pull model (Mullet, Dej, Lemaire, Raïff, & Barthorpe, 2000), was used to locate the factors that may influence athletes' decision.

## **Method**

An analysis of contents was done on verbatim from in-depth interviews led with 31 elite athletes (Ledon, 2012). Based on the push pull anti push anti pull model, picked up meaning units were used to constitute 40 items forming the first version of the tool. This version was then submitted for review to a panel of dual support providers and the improved version to a panel of 10 elite athletes for verifying the good understanding of items. The first version will be distributed to a sample of about 450 elite athletes living in elite sport training center.

## **Expected results**

It is expected that the 40 items of the questionnaire will share out, through a factorial analysis process, into 4 factors (push pull, anti-push anti-pull)

## **Conclusion**

This tool will be useful for dual career support providers as it will help them to better identify the ins and outs of the decision-making process of young elite athletes entering an elite sport training center. That should contribute to a more efficient follow-up to prevent a potential crisis transition. This tool will also be useful in a research perspective.

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# The effects of mental coaching on mental skills of Tunisian karate elite

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**Keywords:** Mental skills, karate, Tunisian elite athletes

## **Introduction**

The improvement and the reinforcement of the mental skills of the athlete in the form of imagery and relaxation technique is one of the psychological and mental assistance objectives in higher sport level (Baert and Dufour, 2007).

## **Objectives**

The aim of our research consisted in checking the influence of the mental coaching while using the mental imagery and relaxation techniques based on cardiac coherence and on the improvement of the cognitive, emotional and behavioural reactions of the Tunisian Elite karate athletes.

## **Method**

Our study was about to check if the Tunisian karate Elite athletes who had undergone a mental coaching have a better mental profile than their counterparts of other sporting disciplines and karate players with usual training method. Permission to conduct this study was obtained from the National Federation of each sport for Elite athletes. Our sample consisted on a set of  $N = 46$  athletes divided in experimental group ( $N=24$  athletes) and control group ( $N= 22$  athletes), all aged from 16 to 27 years. The experimental group followed for 10 months two sessions a week of psychological and mental coaching during about 60mn each one. The control group continued to train normally for the same period of time. The third version of the Ottawa Mental Skills Assessment Tool (OMSAT-3) used in the Study of Guelmami et al., (2013) was managed to assess the mental skills of the athletes.

## **Results**

Our study showed that a 10 month mental coaching based on imagery exercises, muscular relaxation and respiratory exploration is needed to improve 4 mental skills, i.e. 'goal setting, ( $t = 4,71$  \*\*\*) 'relaxation' ( $t=6,04$  \*\*\*) , 'imagery ' ( $t=7,83$  \*\*\*) and 'mental practices ' ( $t=8,51$  \*\*\*) . As for the 'planning' there was no difference between the 2 groups ( $T = 1, 57$ ;  $p=12, 4\%$ ) and finally concerning 'focusing', paradoxically, the control group recorded a higher profit than the experimental group ( $T = -11, 16$  \*\*\*) . Our findings sustained the importance of a three-dimensional mental coaching in relation to one basic skill (goal setting), a psychosomatic skill (relaxation) and two cognitive skills (imagery and mental practice).

## **Conclusion**

Our research showed that imagery, associated with relaxation under cardiac coherence, is more efficient than the imagery alone. Moreover, we also highlight the need to implement other techniques based primarily on the mindfulness in sport to improve self-confidence, fear control, refocusing and focusing.

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## **20 years of research on deliberate practice: what do we know and where do sport research has to go**

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**Keywords**: Deliberate practice, sport, expertise, deliberate play

### ***Introduction***

How do we become an expert? According to Ericsson, Krampe and Tesch-Römer (1993) you can only become an expert through deliberate practice, which is an activity designed by a teacher in order to improve the current performance of an individual by focusing on critical abilities. Ericsson and colleagues (1993) specified that deliberate practice: 1) requires a high level of effort; 2) is highly relevant to improve performance in one's domain; 3) is not entirely enjoyable. Also, the amount of time a person engaged in deliberate practice is monotonically related to his acquired performance (Ericsson et al., 1993). Based on this study, many researchers studied the development of expertise in sport through deliberate practice.

### ***Objectives***

This literature review aims to: 1) present how deliberate practice has been studied in sport since 1993; 2) propose new avenues of research in the development of expertise in sport.

### ***Results***

Based on Ericsson and colleagues (1993) characteristics of deliberate practice, researches in sport investigated: 1) the amount of time athletes spent on deliberate practice throughout their career; 2) if the amount of time spent differentiates levels of expertise; 3) which activities are not enjoyable but relevant to improve performance while requiring concentration/effort; 4) if deliberate practice as an experimental protocol can increase performance. The literature review reveals discrepancies on the amount of time necessary to reach the highest level in sport and on deliberate practice as a discriminatory practice in athlete's expertise development. For example, Berry, Abernethy and Côté (2008) found that deliberate play is as important as deliberate practice in the development of expertise in sport. Also, some characteristics of Ericsson and colleagues (1993) study were not investigated by sport researches: the reasons behind the deliberation, the necessity of a teacher, the identification of the critical abilities developed and what athletes learned during deliberate practice. The fact that individual need to start deliberate practice early and that play is not a form of activity that can lead to expert development is controversial in sport literature.

### ***Conclusion***

Future researches on deliberate practice in sport should focus on the controversial aspects raised above and on the uninvestigated notions of Ericsson and colleagues (1993) framework aforementioned. A qualitative methodology is suggested to investigate these avenues of research.

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# Les stratégies de gestion du temps des athlètes de haut niveau pour être performants

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**Keywords:** Expertise, contraintes temporelles, bien-être, projet de vie

## **Introduction**

Les temps sportif et extra sportif interagissent et participent à l'équilibre et à la performance des athlètes. Bien qu'il soit largement reconnu qu'une connaissance plus importante sur l'organisation du temps des sportifs est nécessaire, peu d'études se sont focalisées sur la gestion du temps. Ainsi, Macquet (2010) a montré que les entraîneurs s'appuyaient un ensemble de contraintes pour gérer le temps des athlètes et les préparer aux compétitions. Ils réalisaient des compromis entre les contraintes, tant que ces compromis ne nuisaient pas à la performance. Cependant, Macquet (2010) ne s'est pas centrée sur la gestion du temps par les athlètes eux-mêmes.

## **Objectif**

La présente étude visait à expliquer les stratégies de gestion du temps utilisées par les sportifs de haut niveau pour être performant en compétition et dans leurs études.

## **Méthode**

12 athlètes issus du même centre d'entraînement ont participé volontairement à l'étude. Les athlètes vivaient dans le centre depuis plus de six mois et avaient deux entraînements quotidiens. Un entretien semi-directif a été conduit avec chaque participant. Les participants étaient amenés à décrire et commenter les stratégies de gestion du temps qu'ils utilisaient au cours de la journée, de la semaine et de la saison. Les entretiens ont été retranscrits *verbatim*. Les chercheurs ont mené une analyse inductive et déductive des données (Strauss & Corbin, 1990) afin d'identifier les différentes stratégies mises en place par les athlètes.

## **Résultats**

Les résultats ont montré que le centre d'entraînement et les entraîneurs imposaient des emplois aux athlètes pour s'entraîner, se former et pour "vivre". Ces emplois du temps variaient au cours de la saison. Les résultats ont également montré que pour s'adapter, les athlètes utilisaient deux types de stratégies : des stratégies centrées sur l'optimisation de la performance et des stratégies centrées sur la gestion de la charge de travail. Les stratégies d'optimisation de la performance consistaient à : (a) adapter son hygiène de vie pour être performant, (b) progresser à tout prix, (c) chercher la reconnaissance de l'entraîneur, (d) s'entraîner coûte que coûte, et (e) masquer ses émotions. Les stratégies centrées sur la gestion de la charge de travail consistaient à : (a) changer d'air, (b) créer des temps sociaux, (c) se dégager du temps pour soi, (d) faire des choix, et (e) se préserver physiquement et mentalement. Enfin, les résultats ont montré que les athlètes adaptaient leurs stratégies de gestion du temps au cours de la saison pour améliorer leurs performances et leur bien-être.

## **Conclusion**

Les athlètes adaptaient leurs stratégies de gestion de temps au cours de la saison, en vue d'optimiser leurs performances et leur bien être.

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# Mindfulness: from neuroscientific evidences to sport performance applications

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**Keywords**: Mindfulness, neuroscience, attention, sport performance

## ***Introduction***

Originating from Buddhist principles, mindfulness has generated a large amount of research interest in clinical and cognitive psychology as well as cognitive neuroscience over the last twenty years. It is now recognised as a relevant skill for performance in sport, and applied mindfulness-based interventions have been developed for, and assessed in, this context.

## ***Objectives***

This presentation will aim to give an overview of the mindfulness construct in relation to consciousness and attention, in addition to integrating the different perspectives adopted toward mindfulness: from its Eastern roots to the various models in cognitive psychology, clinical psychology and the neurosciences. Finally, this review will outline the current state of knowledge about mindfulness in sport and concludes by highlighting gaps in the literature on mindfulness as well as presenting avenues for future inquiry.

## ***Method***

A conventional literature search was undertaken using the terms “mindfulness”, “neuroscience” and “sport performance”. The databases searched were OneSearch, PsychInfo and Medline. Papers were included if they were published since 1980 and in English.

## ***Conclusion***

Mindfulness is a quality of consciousness that helps individuals to be aware of their mental activity in the present moment, while maintaining control over a chosen focus of attention (Holzel et al., 2011). In sport, mindfulness reflects a self-regulatory process that may help athletes deal with the myriad challenges that are inherent in high level competition (Gardner & Moore, 2007). By being more aware of their cognitive and emotional processes while adopting a non-judgmental attitude, athletes can optimally regulate their focus of attention on cues that will support them in achieving their performance goals. While the recent investigations provide advancements in the understanding, measurement, and training of mindfulness in elite sport (Thienot et al., 2014), in a general sense this construct remains very much in its infancy, and a host of promising future research avenues exist regarding the development and implications of mindfulness in athletic settings.

## Coping and emotion in sport: new perspectives

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**Keywords:** Coping, interpersonal regulation, anxiety, performance, burnout, recovery, stress

### Overview

Participation in competitive sport can be a stressful experience, which is often associated with a range of unpleasant emotions such as worry, frustration, and discouragement. These stressful experiences can cause psychological and physiological disruption, leading to performance difficulties, chronic fatigue, injuries, emotional control problems, burnout, and decreased enjoyment. In order to circumvent the negative effects of stress and unpleasant emotions, athletes must cope in order to maximize their sporting performance and emotional well-being. Coping is a multidimensional self-regulation construct that represents the constantly changing behavioral and cognitive mechanisms used to manage the ongoing internal and external demands of a specific stressful episode (Lazarus & Folkman, 1984). Coping could be conceived as one of many self-regulatory processes that provide an individual with the capacity to modulate thoughts, affects, and behaviors over time and across changing environments (e.g., Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001) and has been proposed as an essential factor to understand why some athletes perform better than others (Hardy, Jones, & Gould, 1996).

Therefore, the aim of this symposium is to provide a deeper understanding of the critical importance of coping and news perspectives to explore this concept in sport context. Through four interventions using a process-oriented approach and promising methodological approach (e.g., self-confrontation, dual-trajectory model, Bayesian Multilevel Structural Equation Model, cluster analysis), this symposium offers alternative ways to explore this concept in different sport contexts (e.g., team sport, soccer referees, elite fencers, youth table-tennis players).

The first intervention of Mickaël Campo will focus on interpersonal emotion regulation processes occurring during competition in elite rugby union based on the Gross' (1998) process model. The second intervention of Benoît Louvet will focus on the associations between anxiety and coping and specifically their longitudinal patterns of co-occurrences with soccer referees. The third intervention of Julie Doron will revisit the complex nature of serial dependency of performance during a fencing match by examining the associations between psychological processes and subsequent performance at the within-person level of analysis, and by exploring whether psychological processes are associated with the likelihood of winning series of points. The final intervention of Guillaume Martinent will focus on coping profiles of youth table-tennis player and their relationships with burnout, stress and recovery.

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# Interpersonal emotion regulation in sport: how and why?

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**Keywords:** Emotions, interpersonal regulation, coping, team sport

## Introduction

Emotion regulation and coping are related concepts, but the former could be argued as being a “broader approach than just coping” (Jones, 2012, p.162). In that sense, some authors have suggested the application of the process model suggested by Gross (1998) to sport. However, to date, few studies have used Gross’ process model and of those, the model has only been partially examined. In the present two-study investigation, we examined emotion regulation processes occurring during competition in elite rugby union, a team sport context.

## Objectives

In Study 1, we studied the extent to which players’ emotions were regulated by the actions of other players. In Study 2, we investigated the motives of elite male rugby players to regulate their teammates’ emotions during competition.

## Method

Study 1: ecological design (22 elite male rugby players ( $M = 27.59$ ,  $SD = 3.64$  years) 44 self-confrontation interviews to gather information on the regulation processes that occurred during rugby games.

Study 2: quasi-experimental wdesign 30 elite male rugby players ( $M = 19.06$ ,  $SD = 0.78$  years) wa competitive game has been organized w 30 self-confrontation interviews to gather information on the motives leading a player to regulate his teammates’ emotions during competition.

## Results

Gross’ (1998) process model could be identified from the data and used to interpret interpersonal emotion regulation. Interview data from elite male rugby players ( $n = 22$ ) revealed co-regulation and external regulation from teammates during competition were key themes. Interview data showed that players regulated the emotions of others in accordance with both their individual values and in a way that was directed toward achieving personal goals.

## Conclusion

Collectively, the present research identified both how and why others engage in action intended to regulate emotions during competition. It is suggested that individual goals and ego involvement are both critical when addressing emotion regulation within group contexts.

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# Co-occurrences of anxiety and coping among soccer referees: a dual-trajectory model

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**Keywords:** Coping, anxiety, longitudinal analysis, dual-trajectory model

## **Introduction**

It is widely recognized that coping strategies used by athletes to face up to a stressful encounter influence sport performance (Hoar, Kowalski, Gaudreau, & Crocker, 2006). The transactional model of stress and coping states that anxiety and coping share close relations (Lazarus & Folkman, 1984). Indeed, as an event unfolds, athletes feel emotions when they perceive an unbalance between the situational demands and their own resources. Among the various emotions that can be experienced, anxiety is the most cited one (Bolger, 1990). The inherent recursiveness of the coping process lets us consider the relations between anxiety and coping in two ways (Raffety, Smith, & Ptacek, 1997). Either anxiety acts as an antecedent of coping or as an outcome of coping. Nonetheless, these two processes are so imbricated that it seems more appropriate to examine their longitudinal patterns of co-occurrences to provide a fine-grained description of their relations.

## **Objective**

The aim of this study is (1) to determine prototypical profiles of coping utilization and of anxiety experiences and (2) to jointly analyze these profiles in order to highlight specific co-occurrences of coping and anxiety with soccer referees.

## **Method**

227 soccer referees participated in this study and completed the Competitive State Anxiety Inventory-2 and the Ways of Coping Checklist three times over an entire competitive season.

## **Results**

Results showed three distinct profiles for cognitive and somatic anxiety. They also revealed five different trajectories for problem-focused coping and three profiles for disengagement-oriented coping and for seeking-support coping. Joint probabilities of coping utilization clusters co-occurring with anxiety are proposed. For example, moderate and stable cognitive anxiety levels are associated with moderate and decreasing disengagement-oriented coping utilization.

## **Conclusion**

These results highlight the need to account for the multinomial heterogeneity of the longitudinal associations of coping and anxiety. In-depth analyses of athletes' self-regulation processes are recommended to implement idiographic interventions in order to achieve a better adaptation to the competitive conditions.

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# **A point by point analysis of performance in a fencing match: psychological processes associated with winning and losing streaks**

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**Keywords:** Serial dependency, performance streaks, coping, perceived control, negative affectivity

## ***Introduction***

Athletes have all experienced ups and downs in their performance, sometimes rapidly alternating between flashes of brilliance and instances of mediocrity. “These variations are what we want to understand” (Lazarus, 2000). The ongoing process-like nature of the relation between psychological processes and performance has recently been articulated more precisely in an episodic process model of performance (Beal, Weiss, Barros, & MacDermid, 2005). Accordingly, cognitive appraisals, affective states, and coping strategies have been conceptualized as core psychological processes to explicate within-person variations in performance across performance episodes. Consistent with a transactional approach, it can be argued that optimal psychological processes should not only be strengthened by prior winnings but that they could also influence subsequent performance.

## ***Objectives***

Hence, the goal of this study was to (a) revisit the ubiquitous yet complex nature of performance variability during a match, (b) examine whether performance influences subsequent levels of key psychological processes, and (c) explore whether higher than one’s own usual level of perceived control and task-oriented coping and lower than usual negative affectivity are associated with the likelihood of winning the subsequent point and series of points during a match.

## ***Method***

A process-oriented sequential approach was used with 16 women elite fencers (Mage = 22.88 years, SD<sub>age</sub> = 3.30) during a simulated competition. The data were obtained using multiple assessments of perceived control, negative affectivity, and task-oriented coping rated on a 100 mm visual analogue scale immediately after each point during the entire match.

## ***Results***

Multilevel regression analyses revealed that serial dependency of performance fluctuates within a match. Results of a Bayesian Multilevel Structural Equation Model showed that prior performance subsequently influenced psychological processes. Although psychological processes did not predict performance in the subsequent point, successive winnings were associated with higher perceived control and task-oriented coping and lower negative affectivity compared to both losing streaks and non-streaks.

## ***Conclusion***

Successive winnings (i.e., winning streaks) are associated with higher levels of perceived control and task-oriented coping and lower levels of negative affectivity compared to both losing streaks and non-streaks.

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# A cluster analysis of coping among youth table-tennis players in intensive training settings: a two-month longitudinal study

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**Keywords:** Burnout, cluster analysis, coping, recovery, stress

## Introduction

Athletes are confronted with a series of physical, technical, tactical, and psychological demands in training and sport competitions (Martinent & Decret, in press). Youth athletes in intensive training settings seem particularly vulnerable to these high demands because they must cope in their everyday life with lots of stressors (e.g., practice and training, scholar, competitive, social). The achievement of performance goals and the psychological well-being of athletes may depend partly on their capacity to cope effectively with these various demands (Nicholls & Polman, 2007). Identification of prototypical subgroups of athletes with recurring configurations of coping strategies should offer a robust heuristic to examine coping within a more holistic approach to unpack their complex associations with key athletic outcomes.

## Objectives

The purposes of the current study were to identify coping profiles of athletes at three time points, and examine differences between these profiles on burnout, stress and recovery.

## Method

One hundred and forty-seven youth table-tennis players ( $M$  age = 13.91,  $SD$  = 2.03; 33% female) in intensive training settings voluntarily completed self-report questionnaires about coping, burnout, stress and recovery at three measurement occasions (T1 in March; T2 in April; T3 in May). This two-month period was selected because it represented a key point time in the season. The athletes had been in the structure for 6-8 months and it was the end of the competitive season with really important matches for the players (longer training periods, more pressure) (Martinent & Decret, in press). So, in this period, athletes must cope with ever-increasing social, psychological and physiological demands.

## Results

The results of hierarchical and nonhierarchical cluster analyses conducted on the standardized scores of coping strategies revealed three different clusters for both measurement occasions. The three clusters were very similar at the three measurement occasions: Task-oriented coping, distraction- and disengagement-oriented coping, and low coping. Results of MANOVAs revealed that stress, recovery and burnout significantly differed across the coping profiles.

## Conclusion

This study has presented an alternative methodology that may provide researchers and practitioners with a useful way to examine complex naturally-occurring combinations of coping strategies use by youth athletes to cope with their everyday life demands in intensive training settings.

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# Cross-cultural research and physical activity: theoretical considerations, methods and examples

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**Keywords**: Cross-cultural studies, physical activity

## Introduction

Since the 90' cross-cultural research designs are increasingly used in several domains of sport and exercise sciences including psychology. As emphasized by other researchers (Duda & Allison, 1990), we believe this kind of work need to be more widely used. The goal of this presentation is a) to define what is cross-cultural research; b) to expose forces and weaknesses of this approach and c) to present some methodological guidelines through examples based on the literature and on our own experience.

## Results

Cross-cultural research defines some research designs used to explain at an individual level, relations between some aspects of the culture (of a country, of an ethnic group...) on one hand and some psychological processes or some behaviors on the other hand (Lonner & Adamopoulos, 1997). The core justification of this design is to consider that a person is undoubtedly shaped in its characteristics and its functioning by the culture he/she is living in. As a consequence cross-cultural research generally aims at pointing differences in terms of the structure or the level of some psychological characteristics or behavior, by comparing samples of different cultural origins (Vijver, 2003).

Cross-cultural research is useful to estimate the meaning and the existence of constructs across cultures when for example one wants to validate a questionnaire in another language. It also can be used to test the validity of a theoretical model in another culture. Moreover, cross-cultural studies can be especially interesting in understanding processes and predictors of involvement in physical activity. Ecological models (Sallis, Owen, & Fisher, 2008) emphasize the importance of some variables such as cultural norms or public policies whose impact can only be estimated through cross-cultural studies.

In this regard cross-cultural designs generally aim at introducing some variability in the construct analyzed by comparing several countries in which the variable is supposed to be different. The search of mediation variables of a country effect is also specific to cross-cultural designs as well as country modulation effects that can alter relations between constructs.

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# Physical activity and sex: developmental perspective on physical activity levels of girls and boys in the early school years

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**Keywords**: Physical activity, school, sex differences, developmental perspective

## **Introduction**

Physical activity (PA) has proven to be effective in the primary and secondary prevention of many chronic diseases. However, the population is mostly sedentary and some social groups are more concerned by inactivity than others. This is particularly the case for women. Given that differences in sport participation between boys and girls during childhood could lead to sex inequalities in health during adulthood, it is crucial to identify the factors likely to affect PA and sport participation in youth. Social psychologists suggested that sex differences are influenced by sex stereotypes (Fredericks & Eccles, 2005).

## **Objectives**

The aim of this study was to examine through a longitudinal design whether sex differences in percentage of time spent in objective moderate to vigorous PA (MVPA) during physical education (PE) classes depend on sex typing of the sport performed during sessions and of the children.

## **Method**

A two-wave longitudinal follow-up within three cohorts of elementary school children (n=1099) was conducted. Participants were asked to wear an accelerometer throughout the duration of physical education classes in order to measure the percentage of time spent in MVPA.

## **Results**

Multilevel regression analyses revealed that (1) boys have an overall higher level of objective percentage of MVPA during PE classes than girls, (2) sex differences is more pronounced when activities performed are typed as masculine, rather neutral or feminine, and (3) sex differences is more pronounced as children grow up.

## **Conclusion**

These findings demonstrate that, as in everyday life, PE is marked by sex differences in terms of behavioral commitment in disfavor of girls. They supported the utility of a psychological approach, rather than biological, to explain these sex differences. From an applied perspective, these results highlight that PE teacher should be particularly attentive to the way in which he/she presents the activities to teach, and especially, when these activities are considered as masculine and when children grow up.

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# Attitudes towards individuals with disabilities: the influence of the sport status of the perceiver

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**Keywords**: Disability, attitude, sport

## Introduction

Several studies have shown that individuals with disabilities described as exercising were evaluated more favourably on several personality traits, notably on competence-related traits as compared with non-exerciser targets and control targets (Rodgers et al., 2009). However the influence of the sport status of the perceiver on attitudes towards individuals with disabilities has been unexplored.

## Objectives

The purpose of the present research was to examine the influence of the sport status of the perceiver on attitudes towards individuals with disabilities.

## Method

Participants were all non-disabled (N=100; mean age: 33 years), divided into two groups, 50 with a sport-status (physically active) and 50 with a non sport-status (physically inactive). They were invited to complete two standardized and psychometrically valid questionnaires measuring psychological (Personal Views Survey III-R for *hardiness*; Maddi & Khoshaba, 2001) and physical (PSPP; Fox & Corbin, 1989) attributes in everyday life. Participants filled each questionnaire twice: once as themselves and then once when imagining having a disability based on the *other presentation condition* paradigm (Louvet et al., 2009).

## Results

A significant interaction effect was found between the sport status and the presentation condition ( $F_{(1, 98)} = 4.02$ ,  $p < 0.05$ ,  $\eta^2 = .04$ ). Specifically, sport perceivers imagining having a disability reported significantly ( $F_{(1, 98)} = 7.33$ ,  $p < 0.01$ ,  $\eta^2 = .07$ ) higher scores on psychological attributes (N=36.28) than non-sport perceivers (N=32.02). In addition a main effect of the presentation condition was found on physical attributes. Participants reported significantly lower scores on physical attributes ( $F_{(1, 98)} = 63.39$ ,  $p < 0.001$ ,  $\eta^2 = .39$ ) when they imagined having a disability than when they did not.

## Conclusion

These findings suggest negative attitudes towards individuals with disabilities, regarding both physical and psychological attributes. However, the perceptions of psychological attributes seem to be moderated by the sport-status of the perceiver. The present research enriches the literature showing that positive stereotypes linked with sport can moderate negatives stereotypes associated with disability when focusing on psychological attributes.

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# Grouping and pleasure perceived in physical education

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## **Introduction**

It seems important as underlined by some authors in recent years to give more importance to perceived pleasure in schools and especially in physical education (PE). Just like the physical activity practiced, the group organisation can impact pleasure perceived in PE. Research showed that ability grouping such as mixed ability grouping present some challenges and opportunities. The alternation between mixed ability and ability grouping seems to be the best solution to reduce disadvantages of both group organisation and to increase their advantages. Despite the amount of research focusing on ability grouping and heterogeneous classes, the alternation of both grouping has received little attention.

## **Objectives**

This study was based on a Swiss secondary school where physical education (PE) teachers have introduced grouping for one of the three PE hours per week; during the two remaining hours, students practice PE in their heterogeneous classes. The purpose of this study was to compare the effects of temporary ability-based groups vs. mixed ability classes on pleasure perceived in two different activity lessons: endurance and basketball.

## **Method**

Participants included 237 students from a secondary school aged 11 to 15 years old ( $M_{age} = 13.17$  years old,  $SD = .81$ ): 119 participating in PE in temporary ability-based groups and 118 in mixed ability classes. Endurance lessons concerned 8<sup>th</sup> grade students ( $n = 118$ , 6 weeks) and basketball lessons concerned 9<sup>th</sup> grade students ( $n = 119$ , 11 weeks). All students were categorised in three different ability level (lowest, average and best students) at the beginning of the lessons, based on their efficiency in technical exercises and in a game (direct observation) for basketball, and based on the distance covered in a Cooper test for endurance. Pleasure perceived in activity was estimated at the end of lessons thanks to a validated 10-item scale (Delignières, 1998). Ancova tests permitted to test the interaction effect between grouping procedure and students' ability level on pleasure perceived.

## **Results**

There was a significant effect of grouping procedure on perceived pleasure in basketball lessons,  $F(1, 90) = 6.729$ ,  $p = .011$ ,  $\eta_p^2 = .070$ , and in endurance lessons,  $F(1, 100) = 5.86$ ,  $p = .017$ ,  $\eta_p^2 = .055$ : pleasure perceived in basketball lessons and endurance lessons was higher among students from temporary ability-based groups than among students from mixed ability classes. There was no significant effect of students' ability level on perceived pleasure in endurance lessons,  $F(2, 100) = .727$ ,  $p = .49$ ,  $\eta_p^2 = .01$ , and basketball lessons,  $F(2, 70) = .024$ ,  $p = .977$ ,  $\eta_p^2 = .001$ . Finally, there was no significant interaction between grouping and students ability level on perceived pleasure in endurance lessons,  $F(2, 100) = .49$ ,  $p = .62$ ,  $\eta_p^2 = .010$ , and basketball lessons,  $F(2, 90) = .131$ ,  $p = .88$ ,  $\eta_p^2 = .003$ .

## **Conclusion**

The alternation of ability-based and mixed groups in PE seems to have a positive effect on the perceived pleasure. Teachers should alternate mixed and ability-based groups in order to increase the perceived pleasure, and consequently the students' motivation to continue the activity outside PE.

